EFFECTIVENESS OF REGULAR PHYSICAL ACTIVITIES IN PROMOTING WELLBEING AMONG ELDERLY POPULATION (60-70 YEARS) IN A SELECTED OLD AGE HOME, MANGALORE.

by

RIYA JOSE

Dissertation Submitted to
Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka.

In Partial fulfillment
of the requirements for the degree of

Master of Science

in

Community Health Nursing

Under the guidance of

Asso.Prof (Mrs.) Jenifer D'Souza

Department of Community Health Nursing
Laxmi Memorial College of Nursing
Mangalore

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Date: 15/02/10 **Riya Jose**

Place: Mangalore

ABSTRACT

Background

Ageing is a very slow and gradual process, which starts the moment a person, is born. Ageing is a part of life and its degenerative nature exposes the individual to several physical, social and psychological problems. Physical activity helps better mobility among old people and it enhances their wellbeing and ability to live independently. Walking is one of the most enjoyable exercises and is virtually risk free. Health gains from walking are particularly valuable for old people, as they improve muscle strength, balance and posture. These simple health tips help old people to achieve a rejuvenation effect and with this renewed ability the elderly can enjoy more stimulating environments and keep their minds more active.

Aim

The aim of the study was to evaluate the effectiveness of regular physical activities in promoting wellbeing among elderly.

Objectives of the study.

- To determine the level of physical activity among elderly population as measured by physical activity assessment tool.
- To determine the wellbeing of elderly population as measured by wellbeing assessment tool.
- To determine the effectiveness of regular physical activities in the wellbeing of elderly population in the experimental group.
- To compare the post-test wellbeing scores of elderly population in the experimental and control group.

Methods

Quasi experimental approach with pre-test post-test control group design was used and the study was conducted in two old age homes namely Little Sisters of Poor Home and Mother Theresa's Charity Home Mangalore, Karnataka. The sampling technique used was simple random sampling. Data collection was from 5/8/09 to 28/8/09. Sample of the study consisted of 40 elderly in the age group of 60-70 years in selected old age homes. The investigator obtained written permission from the concerned authority prior to the study. Pre-test data was obtained by using physical activity assessment tool and wellbeing assessment tool from experimental and control group. Regular physical activity was given to experimental group for two weeks in the morning with duration of 20 minutes. During the intervention researcher divided the samples into four groups in order to minimize risk for falls and injury. Each group consisted of four old people and physical activity was given to them. The investigator also involved one trained assistant in the study area to protect the old people from falls or injuries. Post-tests were given from the very next day and it took four days to complete. Data was analyzed by using descriptive and inferential statistics.

Results

In experimental group, mean post-test wellbeing score (15.8+ /-2.61) was higher than that of mean pre-test score (13.75+ /-2.69) where as in control group , mean post-test wellbeing score (13.7+ /-2.71) was almost similar to the mean pre-test wellbeing score (13.8+ /-2.50) ,which suggest that wellbeing score was consistent in the control group.

There was a significant difference in wellbeing scores before and after administration of regular physical activity in the experimental group (t_{19}= 1.729, P<0.05) . A significant difference was also found in the comparison of wellbeing scores in the experimental and control group (t_{38}=2.021, $p < 0.05$). This suggests that regular physical activity was effective in promoting wellbeing of elderly.

Interpretation and conclusion

The findings of the study indicated that regular physical activity was effective in promoting wellbeing of elderly.

Key words

Effectiveness; Regular physical activities; Wellbeing.

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INTRODUCTION

1. INTRODUCTION

"Viewed as a whole, the problem of ageing is no problem at all. It is only the pessimistic way of looking at a great triumph of civilization" –

Notestein.

Ageing is a dynamic process, which brings about physical and mental changes, as well as a change in social status [1]. Ageing is natural and normal. But being healthy and satisfied in old age is something more than just being normal [2].

Across the world, countries are experiencing population ageing. The growth rate of the elderly population is more rapid in developing countries like India than developed countries. Apart from demographic transitions, socio-economic and political changes together with increased individualism have altered living conditions of the elderly [3].

Today, the elderly demand that society should not only ensure independence and participation, but also provide care, fulfillment and dignity. Limited understanding of factors influencing their quality of life is largely responsible for the elderly being denied a dignified existence. After all, the last stage of life holds as much potential for growth and development as earlier stages. The diversity among the elderly and varied inter-related influencing aspects from their environment needs significant consideration of researchers and policy planners [2].

Life is dear to every one, young and old, rich and poor. Interest in life does not diminish with age, nor does the desire to lead a decent and dignified life. Older people, who are healthy, are a precious resource. In a rapidly greying world, healthy ageing is vital for country's development [2].

Healthy ageing can be achieved through the state of wellbeing. Wellbeing is the integration of body, mind and spirit-the appreciation that everything you do, and think and feel and believe has an impact on the state of health. In simple way, wellbeing can be defined as the perception of feeling well. In order to feel well the individual should have the ability to be active and to do what they want or they must[4].

Activity is a manifestation of life; and a more abundant life is the reward of activity. Stagnation is the immediate forerunner of death. When a tree ceases to grow, it dies. The Dead Sea is a stagnant sink, and is called the Sea of Death, for it has no outlet, and therefore no activity. Fish cannot live in its waters, for it has become a reservoir of poisons, which have been accumulating and multiplying for centuries [5].

This law of life holds well in the operation of every organ of the body. Muscles little used, become weak, teeth not used, soon decay; eyes little used, lose their power; they fulfill their respective functions with a strength in direct proportion to their proper exercise. The value of regular exercise cannot be overestimated. It is the law of life in every living thing [5].

In short it can be said that, current trends in demographics coupled with rapid urbanization and lifestyle changes have led to the emergence of a host of problems among the elderly in India. It must be remembered that improving the wellbeing of elderly calls for a holistic approach and concerted efforts by the health and health related sectors [6].

Background of the Study

Ageing is a very slow and gradual process, which starts the moment a person, is born[1]. Ageing is a part of life and its degenerative nature exposes the individual to several physical, social and psychological problems. The plight of majority of our elderly is pitiful. They are like rags bundled out into corners [2].

A demographic revolution is under way through out the world. Thanks to unprecedented public health advancement and success in many parts of the world, the proportion of people aged 60 and over is growing faster than any other age group. In 2025, there will be about 1.2 billion people over the age of 60. A quarter century later, the number of over -60s will almost double and 80% of older persons will live in developing countries [2]

Does old age necessarily mean ailments and being out of shape? Not at all! Old age can be equally enjoyable and full of zest, if they lead a productive life. Physical activity helps better mobility among older people and it enhances their wellbeing and ability to live independently [7].

In Guatemala some years ago a number of blind elderly people were found begging in the streets. A rehabilitation scheme was commenced. The old people were taught to care for themselves , and then to undertake domestic chores like lighting fires, looking after children, and indeed work at some modest income producing task. Suddenly the families who had abandoned the old blind people were asking to have them at home again. Blame the relatives, we might! But this example does highlight the importance of personal productivity in many Third World lands [1].

Most forms of regular, moderate physical exercise are suitable for anyone at any age. Walking is one of the most enjoyable exercises and is virtually risk free. Health gains from walking are particularly valuable for older people, as they improve muscle strength, balance and posture [2]. These simple health tips help old people to achieve a rejuvenation effect and with this renewed ability the elderly can enjoy more stimulating environments and keep their minds more active [8].

Health status is an important factor that has a significant impact on the quality of life of an elderly population. The major elements of health status are perceived health, especially psychological wellbeing, and functional status. Various studies have shown that perceived health declines with age, and the effects of ill health impact on many areas of daily activity. Health and social services utilization is seen to be more closely related to psychological well-being or the functional status of individuals than to demographic characteristics [6].

A concerned effort is required to touch the lives of every elder person across India, irrespective of gender, class or region. Our aim is a national movement to improve the quality of life of these 'silver' citizens, to ensure that society and government cannot ignore them any longer, and equally, spur them into greater self-reliance. Let us come together to create a society where age is just an irrelevant number, where elders stand side by side with the younger generation, Silver, shining, and proud [2].

Need for the Study:

The elderly are like the setting sun who retreats into the night after giving life-giving light during day time. We cannot eliminate all the problems of the aged, but we can alleviate most of them through adequate care and concern. Being healthy and satisfied in old age is something more and it makes life fruitful and delightful [2].

The aspect of wellbeing refers to positive physical, psychological and spiritual health. The elderly are susceptible to physical, psychological and spiritual deterioration. Being a nurse, we can utilize our body of knowledge creatively for the well being of these old people to enhance their lives at every stage in health, frailty, sickness, disability and death [3].

A comparative study conducted among 76 aged Iranians (60-79yrs) and natives in Sweden with mail- distributed structured questionnaire, to investigate the quality of life and well- being (health) of the two groups and to describe what the aged Iranians expect from Swedish health services. Standard methods such as mean and standard deviation were used to analyze the age. The χ^2 test was used for goodness - of-fit, to compare the distributions between the two cohorts. A significant relationship was found between ethnicity and wellbeing (health).The results showed that fewer Iranians shared their economy with someone else (54% Iranians versus 64% Swedes). About 60% of Iranians were not satisfied with their life and only 18% of Swedes had the same feeling. Among Iranians 45% and among Swedes 11% reported that they were always / most often tired. Seventy five percent of Iranians compared with 12% of Swedes suffered from loneliness. The finding of the study would be a point of further investigation to find out the factors which affect as stressors and increase the risk of ill health and low quality of life [8].

Physical activity can be fun, and should ideally be conducted in a group setting or with friends, thus increasing social contacts and social integration[10]. Physical activity in old age has been shown to increase muscle strength, balance, joint suppleness and overall physical co-ordination. Appropriate physical activity enhances relaxation and reduces stress and increases mental agility. Physical activity fosters wellbeing and is also the best guarantee for independent living. In addition to this, by creating positive sentiments, one can increase the ability to cope until late in life [2].

A study was conducted among 27 elderly Korean women between the ages of 60-75 years to evaluate the effect of an out door walking exercise program on their physical function, and the emotional state. A pretest posttest design was used to measure the effects of exercise program. The study revealed that the physical function

and the emotional state of the experimental group improved significantly more than that of the control group [11].

A cross sectional study conducted to examine whether low age expectations are associated with low physical activity levels. The study utilized 636 adults aged 65 years and above in the Los Angeles region. Age expectations and level of physical activity were measured using surveys and the associations between these two variables were tested using χ^2 tests. The findings revealed that low age expectation act as a barrier for older adults' participation in physical activity. When compared with the quintile of participants having the highest age expectations, participants with the lowest quintile age expectations had an adjusted odds ratio of 2.6 (95% confidence intervals. 1.5, 4.5) of reporting <30 minutes of moderate vigorous physical activity. These findings suggest that there may exist a threshold of age expectations below which one's age expectations serve as a barrier, and above which it may be easier to start a physical activity program [12].

Most forms of regular moderate physical exercise are suitable for elderly people. Walking is a safe and natural exercise in all life settings; it does not require any special skills or equipment. Other practical examples of physical activities include gardening, cycling, swimming, dancing, and house hold chores and simply climbing the stairs [2] .In a nutshell, it can be said that physical activity is a simple, enjoyable and cost effective medicine for all [7].

Several nursing research studies have been conducted in India regarding health problems and needs of elderly subjects, but not much is studied on how to promote the wellbeing of elderly people. Hence the investigator found the need to determine the effect of regular physical activities in promoting wellbeing among

elderly population, thereby promoting healthy living and adding life to years, thus enabling them to become the productive members of the society.

OBJECTIVES

2. OBJECTIVES

This chapter presents the objectives of the study, operational definitions, variables, assumptions, hypotheses, delimitations, scope of study and conceptual frame work.

Statement of the problem

Effectiveness of regular physical activities in promoting wellbeing among elderly population (60-70 years) in a selected old age home , Mangalore.

Objectives of the Study:

1. To determine the level of physical activity among elderly population as measured by physical activity assessment tool.
2. To determine the wellbeing of elderly population as measured by wellbeing assessment tool.
3. To determine the effectiveness of regular physical activities in the wellbeing of elderly population in the experimental group.
4. To compare the post-test wellbeing scores of elderly population in the experimental and control group.

Operational Definitions:

1. **Effectiveness:** It means producing an intended result. (Oxford English Mini Dictionary – 2004). In this study it refers to the extent to which regular physical activities has achieved the desired effect in promoting wellbeing as measured by gain in wellbeing score.
2. **Regular Physical activities:** In this study, it refers to less demanding activities that are enjoyable and conveniently performed. They include regular walks and climbing stairs. These regular physical activities will be administered for two weeks with duration of 20 minutes.

3. **Wellbeing:** It means comfort, good health, and happiness. (Oxford English Mini Dictionary – 2004). In this study it refers to positive physical, psychological and spiritual health and is measured by wellbeing assessment tool.

Variables

Variable refers to a characteristics or attribute of a person or object that varies within population under study [13].

In this study two types of variables are considered. They are dependent variable and independent variable.

Dependent Variable

The presumed effect is referred to as the dependent variable [13].

In this study wellbeing is the dependent variable.

Independent variable

The presumed cause is referred to as the independent variable [13] .

In this study regular physical activity is the independent variable.

Extraneous variables

Variable outside the purpose of the study that could influence the study's results [14] .

In this study extraneous variables are gender, body ailments, climate changes and routines of the old age home.

Assumptions:

The study assume that,

1. Elderly people experience deterioration of wellbeing.
2. The level of wellbeing is different in each individual.

3. Elderly need some physical activities to promote wellbeing.

4. Elderly people willingly participate in the study.

Projected Outcome (Hypotheses):

H_1: The mean post-test wellbeing score will be significantly higher than the mean pre-test score in the experimental group.

H_2: There will be a significant difference between the mean wellbeing score of experimental group and control group after regular physical activities.

Conceptual framework

Conceptual framework refers to the interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme [13].

The present study was intended to determine the wellbeing and to find out the effectiveness of physical activity in enhancing the wellbeing of elderly.

The health promotion model was proposed by Nola Pender in 1982. Health promotion is directed at increasing a client's level of wellbeing. The focus of the model is to explain the reasons that individuals engage in health activities. The model focuses on the three functions of a client's cognitive perceptual factors (individual perceptions), modifying factors (demographic and social) and participation in health promoting behavior (likelihood of action). The model also organizes cues into a pattern to explain the likelihood of a client developing health promotion behaviours[13]. Pender's factors include the following:

Prior related behavior: Prior related behavior refers to the past frequency of behavior. The more frequently a behavior was done in the past, the more likely it is that the behavior will continue in the future.

In the present study, it refers to the presence of low and moderate wellbeing level among the elderly population.

Personal factors: Personal factors include biological, psychological and socio-cultural factors that directly and indirectly influence the health promoting behaviors.

In the present study, biological factors include elderly population aged 60-70 years and psychological factors include wellbeing of elderly.

In the present study, wellbeing refers to positive physical, psychological and spiritual health.

Perceived benefits of action: Perceived benefits of action refer to the expected positive outcomes of the proposed health promoting behavior.

In the present study, perceived benefits of action include:

- Improved activity level
- Improved wellbeing which comprises of
    - Improved balance
    - Improved strength
    - Good health
    - Comfort
    - Happiness

Perceived barriers to action: Perceived barriers to action are the real and imagined barriers to health behavior change.

In the present study, perceived barriers include:

- Lack of interest
- Lack of motivation
- Lack of self confidence

- Lack of socialization.
- Lack of knowledge about effectiveness of physical activities

Perceived self efficacy: Perceived self efficacy refers to the personal judgments about individual capabilities to organize and consistently perform new behaviors.

In the present study, it refers to the ability of elderly to practice physical activities in order to get improved wellbeing.

Activity related affect: These affective responses may be mild, moderate or strong and are cognitively labeled, stored in memory, and associated with subsequent thoughts of the behavior. It has three components.

- Emotional arousal to the act itself (act related)
- Self acting (self related)
- Environment in which action takes place (context related)

In the present study, activity related affect are wellbeing, physical activity and the spacious ground where the action takes place.

Situational influences: Situational influences refers to the external factors that affect the client's perceptions of the proposed health promoting behavior such as where , when and how the activity will take place.

In the present study, the situational influences are:

- A ground for the practice of regular walk.
- Stairs for step climbing.
- Hazardous free environment

Commitment to a plan of action: Commitment to a plan of action refers to the person's intention to change and the creation of a plan of action to accomplish the implementation of a health promoting behavior.

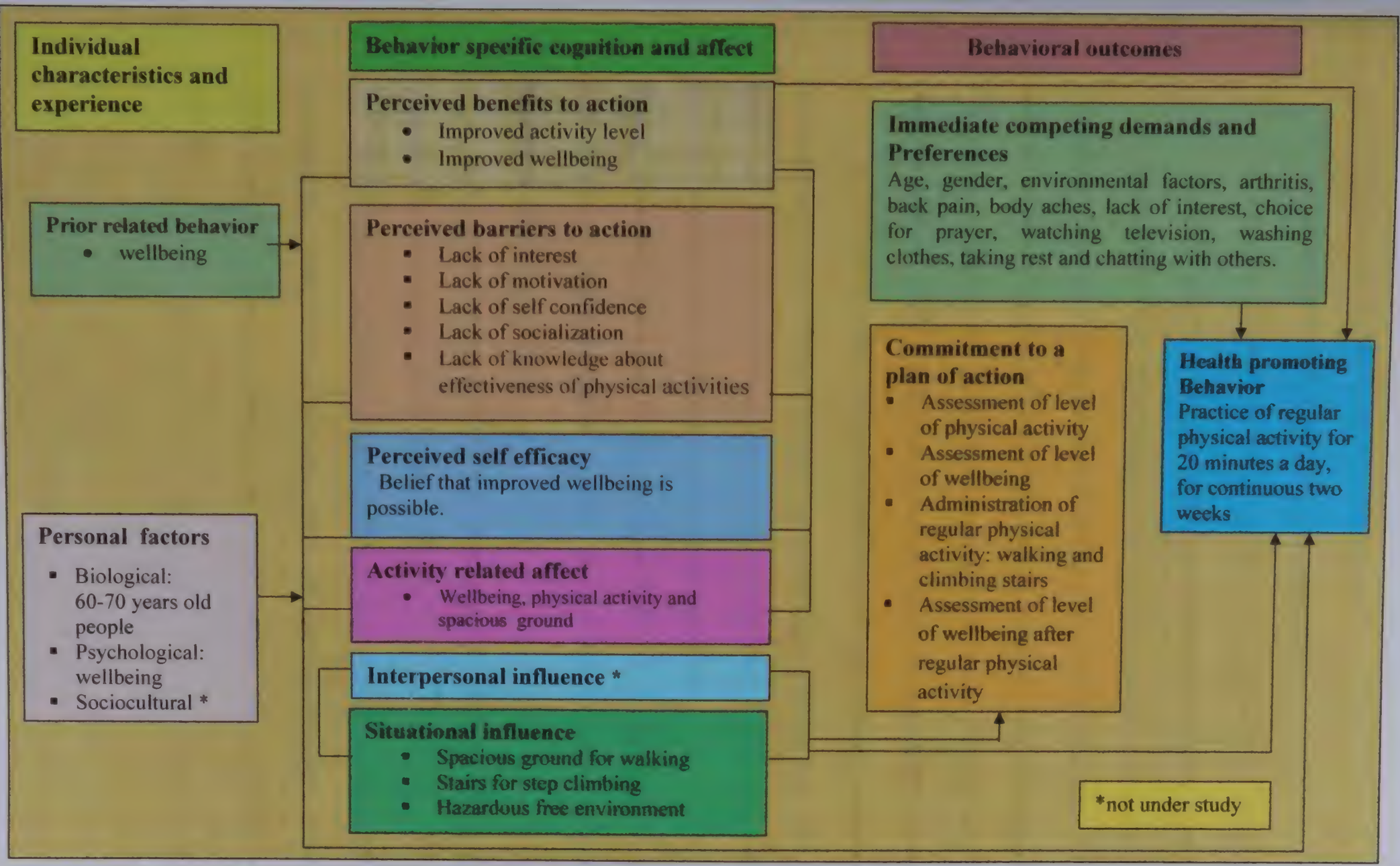
Individual characteristics and experience
Behavior specific cognition and affect
Behavioral outcomes
Perceived benefits to action
Improved activity level
Improved wellbeing
Immediate competing demands and Preferences
Age, gender, environmental factors, arthritis, back pain, body aches, lack of interest, choice for prayer, watching television, washing clothes, taking rest and chatting with others.
Prior related behavior
wellbeing
Perceived barriers to action
Lack of interest
Lack of motivation
Lack of self confidence
Lack of socialization
Lack of knowledge about effectiveness of physical activities
Commitment to a plan of action
Assessment of level of physical activity
Assessment of level of wellbeing
Administration of regular physical activity: walking and climbing stairs
Assessment of level of wellbeing after regular physical activity
Health promoting Behavior
Practice of regular physical activity for 20 minutes a day, for continuous two weeks
Perceived self efficacy
Belief that improved wellbeing is possible.
Personal factors
Biological: 60-70 years old people
Psychological: wellbeing
Sociocultural *
Activity related affect
Wellbeing, physical activity and spacious ground
Interpersonal influence *
Situational influence
Spacious ground for walking
Stairs for step climbing
Hazardous free environment
*not under study

Figure 1: Conceptual framework based on Pender's Health Promotion Model (1996)

The plan of action in the present study includes:

- Assessment of level of physical activities in elderly.
- :Assessment of level of wellbeing in elderly before regular physical activity
- Administration of regular physical activity: walking and climbing stairs
- Assessment of level of wellbeing in elderly after regular physical activity

Immediate competing demands and Preferences: Competing demands refers to alternate behaviors over which individuals have a relatively low level of control. Competing preferences are viewed as alternate behaviors with powerful reinforcing properties over which individuals exert a relatively high level of control.

In the present study, competing demands are age, gender, environmental factors (rain, hot sun, distractions from the surroundings), arthritis, back pain, body aches and lack of interest. Competing preferences are choice for prayer, watching television, washing clothes, taking rest and chatting with others.

Health promoting Behavior: Health promoting behavior is defined as an action directed towards attaining positive outcomes such as optimal wellbeing, personal fulfillment and productive living

In the present study, it refers to practice of regular physical activity for 20 minutes a day, continuously for two weeks.

Health promoting behaviors are a desired outcome when providing client care and education. Nurses in all practice areas have numerous opportunities to encourage health promotion behaviors related to presenting concerns and anticipated health challenges.

Delimitations:

- The study is delimited to old age home residents who are in the age group of 60-70 years only.
- The study is delimited to healthy elderly adults.

Scope of the study:

This study aims at assessing the effectiveness of regular physical activities in promoting well being among elderly population in an old age home. The findings of the study will encourage the institution authorities to provide for the elderly the scope to practice regular physical activities. Regular physical activities help to improve the wellbeing and general health of elderly.

Summary:

This chapter dealt with objectives of study, assumptions, hypotheses, conceptual framework, delimitations and scope of the study.

REVIEW OF LITERATURE

3. REVIEW OF LITERATURE

Review of literature is an analysis and synthesis of research sources to generate a picture of what is known about a particular situation and the knowledge gaps that exist in the situation[15].

Review of literature has provided the researcher an in depth knowledge and insight in to the study problem.

The review of literature is grouped under the following headings:

1. Literature related to wellbeing of elderly.
2. Literature related to physical activities of elderly.
3. Literature related to benefits of physical activities of elderly.

Literature related to wellbeing of elderly

A cross-sectional survey of 200 subjects over 60 years old (100 each from the urban population of Chandigarh City and the rural population of Haryana State of India) was carried out using a cluster sampling technique. The objective of this study was to assess morbidity, co-morbidity, and patterns of treatment seeking, and to determine relationship of morbidity with disability, psychological distress, and socio-demographic variables among the elderly population in Northern India. Psychological distress and disability was assessed using the PGI-Health Questionnaire-N-1 and the Rapid Disability Rating Scale-2, respectively. ANOVA, Kruskal-Wallis H test, correlation coefficient, and multivariate analysis were used to assess the relationship and association of morbidity with other variables. Results showed, of the total sample, 22% of subjects had minimal disability, 48.5% had moderate disability, and 17% suffered from severe disability, while 12.5% did not suffer from any disability. Sex-wise, differences in disability were found to be statistically significant ($p < 0.05$). Sixty-six per cent of elderly subjects were found to be distressed- physically,

psychologically, or both. 88.9% reported illness based on their perception, and of these 43.5% were seeking treatment and actually taking medicines, and 42.5% were diagnosed as having 4-6 morbidities. The mean number of morbidities among elderly people was 6.1 (SD 2.9). Elderly subjects with higher morbidity had increasing disability and distress. Assessment of the morbidity profile and its determinants will help in the application of interventions, both medical and social, to improve the health status and thus the quality of life of the elderly in Northern India [16].

To investigate the current levels of psychological wellbeing in three immigrant groups to New Zealand, a longitudinal study has carried out from the fifth wave of annual in-depth interviews with three groups of recently arrived skilled immigrants from India, the People's Republic of China and South Africa. Of the 80 participants, 60 were male and 20 were females and they were selected by using snowballing technique .The SF-36 Health Status Questionnaire (Ware, 1997), assessed the respondent's functional status and wellbeing in relation to four health concepts: vitality, social functioning, role limitations due to emotional health, and general mental wellbeing. There was little evidence for lower levels of psychological wellbeing for the three immigrant groups compared to the general New Zealand population, nor for differences between the three groups. Of the four scales only vitality was significantly different between the total immigrant sample and the New Zealand population, with immigrants rating their vitality higher (t_{77}= 2.85, $p < .01$). A one-way analysis of variance was conducted to test for differences on the four scales between the three immigrant groups. Only Role limitations due to emotional health was significant (F(77)=4.09, $p < .05$).Comparing the three immigrant groups on psychological wellbeing variables at the bivariate level, the only significant difference

was on role limitations due to emotional health with South Africans reporting lower levels on this scale than Indian participants [17].

An exploratory study attempted to examine factors related to psychological well-being in Asian Indian men and women over 50 years of age residing in the metropolitan Atlanta area and who had lived in the United States for at least 5 years. The sampling strategy used for this study was purposive and nonrandom. Data collection was done through a telephone survey of 226 respondents (aged 50 years and older) in the Southeastern United States. Hierarchical, negative binomial regression analyses were used to examine correlates of positive and negative affect. Results revealed that for positive affect, all models were significant. The Wald chi-square for the full model was 32.13 (df =10, n = 188, p <.0001). For negative affect, stressful life events, gender, religiosity, and mastery meet the criterion for inclusion in the equation for prediction of negative affect. The full model with inclusion of these variables was significant, with a Wald chi-square of 80.71 (df =10, n = 188, p =.001). Future research will have to encompass greater numbers of women, older individuals who have immigrated later in life, and those who are unable to communicate in English in order to better understand variations in the well-being among members of this immigrant group. Additional exploration of the nature of social support received from both the Indian and the larger community may provide a better description of the process of social integration for members of this community. Qualitative explorations of the cultural or ethnic identity variable may also provide greater insight into the particular aspects of culture and adaptation or ways of coping that influence the experience of positive affect [18].

With the objective to establish a baseline information on the age related changes and to gauge the prevalence of underweight and overweight of rural and

urban Brahmin females, a cross-sectional study was conducted in Roop Nagar (Punjab, India) among 870 healthy Brahmin females (rural= 450, urban= 420), ranging in age from 40 to 70 years . The subjects were selected at random and the data were collected from samples using interview schedule. The study revealed that the overall body mass indexes of urban Brahmin females were higher than their rural counterparts (24.70±3.97 vs 24.06±4.11 $p<0.05$).Rural subjects had 48.88% of the subjects in the normal range of body mass index, 6.88% in Grade I underweight and 4.88% in Grade II underweight. Only 29.55% of rural subjects were designated as Grade I overweight and 9.77% as Grade II overweight. The urban Brahmin females, on the other hand had 52.88% of the subjects in normal range, 1.42% in Grade I underweight and only 0.23% in Grade II underweight. 40.23% of the urban females were designated as Grade I overweight and 5.35% as Grade II overweight. Evidence from the study showed that overall prevalence of underweight was higher among rural subjects (11.76%) , whereas overall prevalence of overweight was higher among urban females (45.58%). With the growing aged population, well being and quality of life of elderly persons is of utmost importance at both the individual and the societal levels and hence understanding these changes in the elderly population is helpful to promote their general well being and health status [19] .

In Jamaica an explanatory study was conducted with an aim to provide factors that will explain how to attain 'good' health. This research utilized cross-sectional data taken from the Jamaica Survey of Living Conditions (JSLC) 2002 in order to identify and explain some of the determinants of well-being among the Jamaican elderly. Information collected used self-administered questionnaire. Multivariate regression was used to establish the well-being model. The surveyed population was 3009 respondents ages 60 years and older, with 52.7% females (n=1423) and 47.3% males

(n=1423). The average age of the surveyed population was 71 years 10 months +/- 8 years six months. Of the 14 predisposed variables that were used to test the general hypothesis, 11 were found to be statistically significant. From the selected variables of this study, the six most important factors that had an impact on the wellbeing of the Jamaican elderly in descending order are as follows: social support (beta = 0.486), average occupancy per room (beta = -0.428), area of residence living in Kingston Metropolitan Area (KMA) with reference to rural areas (beta = 0.179) or dwelling in other towns with reference to rural area (beta = 0.157), education (beta = 0.155) followed by the physical environment (beta = -0.138) and age of respondents (beta = -0.129). The general wellbeing of the Jamaican elderly was low (mean of 3.9/14 +/- 2.3). The researchers concluded that the predisposed variables used in this study explained 45.9% of the variance in quality of life. The variable that has the most influential impact on well-being is social support. The model provides a basis upon which we can address patient care and 'good' health [20].

Literature related to physical activity of elderly

To evaluate the association of perceived neighborhood safety with pedometer-determined physical activity and physical activity self efficacy, a study was held among 1180 samples of Boston. This study used a randomized cluster design with 12 urban public housing communities in metropolitan Boston as the primary sampling units. Participants completed a 5-pedometer data-collection protocol and self-reported their perceptions of neighborhood safety and self-efficacy (i.e, confidence in the ability to be physically active). Analyses were conducted using SUDAAN version 9.01 and SAS version 9.1 statistical software for clustered data. No association was found between daytime safety reports and physical activity among both men and

women. There was also no association between night-time safety reports and physical activity among men (p = 0.23) but women who reported feeling unsafe (versus safe) at night showed significantly fewer steps per day (4,302 versus 5,178, p = 0.01).Perceiving one's neighborhood as unsafe during the day was associated with significantly lower odds of having high physical activity self-efficacy among both men (OR 0.40, p = 0.01)and women (OR 0.68, p = 0.02) .The results of the study suggests that prospective studies are sorely needed to examine both objective safety indicators and individuals' perceptions [21].

With a view to examine the descriptive patterns in perceived environmental and policy determinants of physical activity and associations between these factors and behavior, a cross-sectional study was conducted among US adults. Data were collected via telephone survey, and a modified version of the sampling plan of the Behavioral Risk Factor Surveillance System (BRFSS) was used in data collection and 1818 individuals were interviewed. The random-digit-dialed sampling was used for this project. Multivariate and logistic regression analysis was used for statistical analysis. The most common responses were as follows: on neighborhood streets (66.1%), at shopping malls (37.0%), at parks (29.6%), on a walking and jogging trail (24.8%), on a treadmill (24.7%), and at an indoor gym (21.3%). Most of these general and specific access variables were associated with meeting the recommendations for physical activity. Access to parks (adjusted OR = 1.95, 95% CI = 1.52, 2.52), indoor gyms (adjusted OR = 1.94, 95% CI = 1.45, 2.60), and treadmills (adjusted OR = 1.48, 95% CI = 1.13, 1.93) was also positively associated with physical activity. In addition several policy variables were positively associated with physical activity: believing that employers should provide time for exercise (adjusted OR = 1.27, 95% CI = 1.01, 1.59) and supporting the use of local government funds for walking and

jogging trails (adjusted OR = 1.42, 95% CI = 1.00, 2.01). The findings suggest that a range of environmental and policy variables are important to consider when designing interventions. However, it is likely that these determinants vary in importance across settings, so community-specific tailoring of approaches will be needed [22].

A comparative study attempted to examine: (1) urban-rural differences in LTPA (leisure time physical activity) by socio demographic factors, (2) urban-rural differences in LTPA determinants, and (3) the pattern of relations between LTPA determinants and LTPA. A modified version of the sampling plan of the Behavioral Risk Factor Surveillance Survey (BRFSS) was used. Zip codes were selected with 20% or more of each of the following race/ethnic groups: African American, American Indian/Alaskan Native (AI/AN), and Hispanic. A comparison group of white women were also surveyed using standard BRFSS techniques. Participants were Rural (n=1242) and urban (n=1096) women aged 40 years and older from the US. Main results revealed rural women, especially Southern and less educated women, were more sedentary than urban women. Rural women reported more personal barriers to LTPA, cited care giving duties as their top barrier (compared with lack of time for urban women), and had greater body mass indices. Rural women were less likely to report sidewalks, streetlights, high crime, access to facilities, and frequently seeing others exercise in their neighborhood. Multivariate correlates of sedentary behavior in rural women were AI/AN and African American race, older age, less education, lack of enjoyable scenery, not frequently seeing others exercise, greater barriers, and less social support ($p<0.05$); and in urban women, older age, greater barriers, less social support ($p<0.05$), and less education ($p<0.09$).The investigator concluded that rural and urban women seem to face different barriers and enablers to

LTPA, and have a different pattern of determinants, thus providing useful information for designing more targeted interventions [23].

To examine the perceived influences on PA (physical activity) participation, the perceived link between spirituality and health behaviors and the perceived role of the church in promoting PA, a qualitative study was conducted among 44 African American men and women church members of South Carolina . In preparation for a faith-based intervention, eight focus groups were conducted with sedentary or underactive participants. Groups were stratified by age (<55 years versus ≥55 years), geography and gender. Four general categories were determined from the focus groups: spirituality, barriers, enablers and desired PA programs. The facilitator asked questions about the group's perception of barriers to PA for themselves and fellow church members. The text was entered into NVivo (QSR International PTY Ltd), a software program that facilitates qualitative data analysis by allowing for the coding and organization of data across themes and groups. Personal, social, community and environmental barriers and enablers were described by both men and women, with no apparent differences by age. Additionally, both men and women mentioned aerobics, walking programs, sports and classes specifically for older adults as PA programs they would like available at church. This study provides useful information for understanding the attitudes and experiences with exercise among African Americans, and provides a foundation for promoting PA through interventions with this population by incorporating spirituality, culturally specific activities and social support within the church [24].

A cross sectional study conducted in Oslo, among 3499 inhabitants aged 74/5 aimed to study the associations between neighborhood level violence/fear of violence

and physical activity, accounting for somatic health. Oslo, Norway. Multilevel regression analysis was used to explore associations more thoroughly. Main results revealed that 20.5% of the elderly were physically less active. Neighborhood level violence was associated with physical activity only for men, while fear of violence was only associated with physical activity for women. Differences in somatic health did not explain differences in physical activity between neighborhoods. These differences were explained by socioeconomic variables, and neighborhood level violence/fear of violence. The associations between neighborhood level violence and physical activity (among men), and fear of violence and physical activity (among women), were of the same sizes as those between somatic health and physical activity. These two dimensions of violence have, in contrast with somatic health, an explanatory function in exploring differences in physical activity between neighborhoods in Oslo. The growing body of new research on physical activity among the elderly shows that most health benefits can be gained by performing regular moderate intensity physical activities outside of formal exercise programmes.[25]

In Prince Edward Island (PEI) a longitudinal study was conducted to determine the relationship between objective measures of physical activity and weather. This report analyzed data from 25 males (BMI (mean ± SD): 28.7 ± 3.83 kg/m^2) and 177 females (BMI: 29.2 ± 5.92 kg/m^2) enrolled in an intervention to increase physical activity. Steps/day of the participants was measured by pedometer. Weather data were obtained from Environment Canada. A total of 8,125 observations were included in a mixed linear model analysis. Significant weather related variables (at the 5% level) impacting steps/day included: seasonal effects related to the interaction between weekday and month; mean temperature, total rainfall, interactions

between gender, BMI and total snow, interactions between maximum wind speed and BMI, and the amount of snow on the ground. The estimated magnitudes for the various effects were modest, ranging from 1% to 20%. Thus for an average individual taking 10,000 steps/day, weather-dependent changes in physical activity could reach 2,000 steps/day. The researcher concludes that weather had modest effects on physical activity of participants in an intervention to increase their activity. It should be stressed that these effects may be different for less or more motivated people. With this in mind, the effect of weather on physical activity in the general population needs to be objectively assessed to better understand the barrier it poses, especially as it relates to outdoor recreation or work activities [26].

The goal of this cross-sectional study was to assess the associations of physical activity time and television (TV) time with risk of "undiagnosed" abnormal glucose metabolism in Australian adults. This study used a stratified cluster design involving 42 randomly selected Census Collector Districts across Australia included 8,299 adults aged 25 years or older who were free from new type 2 diabetes and self-reported ischemic disease and did not take lipid-lowering or antihypertensive drugs. Abnormal glucose metabolism (impaired fasting glycemia [IFG], impaired glucose tolerance [IGT], or new type 2 diabetes) was based on an oral glucose tolerance test. Self-reported physical activity time and TV time (previous week) were assessed using interviewer-administered questionnaires. After adjustment for known confounders and TV time, the odds ratio (OR) of having abnormal glucose metabolism was 0.62 (95% CI 0.41–0.96) in men and 0.71 (0.50–1.00) in women for those engaged in physical activity ≥2.5 h/week compared with those who were sedentary (0 h/week). The ORs of having abnormal glucose metabolism were 1.16 (0.79–1.70) in men and 1.49 (1.12–1.99) in women who watched TV >14 h/week compared with those who

watched ≤7.0 h/week. Higher TV viewing (>14 h/week) was also associated with an increased risk of new type 2 diabetes in men and women and IGT in women compared with those watching <14 h/week. Total physical activity of ≥2.5 h/week was associated with a reduced risk of IFG, IGT, and new type 2 diabetes in both sexes; however, only the association with IGT in women was statistically significant. These findings suggest a protective effect of physical activity and a deleterious effect of TV time on the risk of abnormal glucose metabolism in adults. Population strategies to reduce risk of abnormal glucose metabolism should focus on reducing sedentary behaviors such as TV time, as well as increasing physical activity [27].

An exploratory study was conducted to examine barriers and facilitators to physical activity and exercise among underserved, ethnically diverse older adults. Seventy-one older adults were recruited through community agencies to participate in seven ethnic-specific focus groups: American Indian/Alaska Native, African American, Filipino, Chinese, Latino, Korean, and Vietnamese. Groups were conducted in the participants' primary language and ranged in size from 7–13 participants. Mean age was 71.6 years (range from 52 to 85 years; SD ± 7.39). Professional translators transcribed audiotapes into the language of the group and then translated the transcript into English. Transcripts were systematically reviewed using content analysis. Suggested features of physical activity programs to enhance participation among ethnically diverse minority older adults included fostering relationships among participants; providing culture-specific exercise; offering programs at residential sites; partnering with and offering classes prior to or after social service programs; educating families about the importance of physical activity for older adults and ways they could help; offering low- or no-cost classes; and involving older adults in program development. Walking was the exercise of choice

across all ethnic groups. Health served as both a motivator and a barrier to physical activity. Other factors influencing physical activity were weather, transportation, and personal safety. Findings from this study suggest strategies for culture-specific programming of community-based physical activity programs [28].

Literature related to benefits of regular physical activities

The aim of a cohort study conducted in United States was to assess walking endurance of 3075 well-functioning men and women aged 70–79 in the Health, Aging and Body Composition Study. The study used the LDCW (The long-distance corridor walk) test to assess walking endurance in a cohort of well-functioning older adults to describe function in the normal to exceptionally high range. Participants who were excluded from the 400-meter walk, those starting but not completing, and those completing the walk were compared by analysis of variance (ANOVA) and the chi-square test of proportions . The SBP (Systolic blood pressure) response varied very little by presence or absence of each health condition. The largest increase was noted in diabetics, whose SBP rose on average 17.3 ± 21.1 mmHg during the test compared with 11.3 ± 19.3 mmHg in those without diabetes ($p < .0001$). SBP response was greater in each higher gender-specific quartile of BMI, ranging from 10.1 to 14.5 mmHg from lowest to highest quartile, $p = .007$ When walk time was added to this model, it was independently associated with SBP response (Beta [SE]) = -0.05 (0.01), p value =.0001, model r^2 = 7%), but did attenuate associations with disease. Those with higher BMI had slightly higher heart rate response varying from 23.4 ± 12.9 to 26.8 ± 31.1 from lowest to highest gender-specific quartile ($p = .002$). Walk time itself, when added to the model, was strongly and independently associated with heart rate response (Beta [SE] = -0.09 (0.01), p value =.0001). These findings show that

walking performance is a valid indicator of physiologic reserve in older adults. Use of this test in clinical practice might raise awareness as to the extent that older adults may be impaired in walking performance [29].

The underlying objective of this prospective study was to examine whether national physical activity recommendations are related to mortality benefit. The study prospectively examined physical activity guidelines in relation to mortality among 252 925 women and men aged 50 to 71 years in the National Institutes of Health–American Association of Retired Persons (NIH-AARP) Diet and Health Study. Physical activity was assessed using 2 self-administered baseline questionnaires. During 1 265 347 person-years of follow-up, 7900 participants died. Compared with being inactive, achievement of activity levels that approximate the recommendations for moderate activity (at least 30 minutes on most days of the week) or vigorous exercise (at least 20 minutes 3 times per week) was associated with a 27% (relative risk [RR], 0.73; 95% confidence interval [CI], 0.68-0.78) and 32% (RR, 0.68; 95% CI, 0.64-0.73) decreased mortality risk, respectively. Physical activity reflective of meeting both recommendations was related to substantially decreased mortality risk overall (RR, 0.50; 95% CI, 0.46-0.54) and in subgroups, including smokers (RR, 0.48; 95% CI, 0.44-0.53) and nonsmokers (RR, 0.54; 95% CI, 0.45-0.64), normal weight (RR, 0.45; 95% CI, 0.39-0.52) and overweight or obese individuals (RR, 0.48; 95% CI, 0.44-0.54), and those with 2 h/d (RR, 0.53; 95% CI, 0.44-0.63) and more than 2 h/d of television or video watching (RR, 0.50; 95% CI, 0.45-0.55). Engaging in physical activity at less than recommended levels was also related to reduced mortality risk (RR, 0.81; 95% CI, 0.76-0.86).The study concluded that following physical activity guidelines is associated with lower risk of death. Mortality benefit may also be achieved by engaging in less than recommended activity levels [30].

A prospective cohort study with annual mortality follow up was conducted in City of New Haven, Connecticut, United States. Objectives of the study were to examine any association between social, productive, and physical activity and 13 year survival in older people. Activity and other measures were assessed by structured interviews at baseline in the participants' homes. Proportional hazards models were used to model survival from time of initial interview. 2761 men and women from a random population sample of 2812 people aged 65 and older participated in the study. Cluster sampling technique was adopted in this study. Functional health status was assessed by three commonly used, self reported measures of disability: a seven item Katz index of basic activities of daily living; a three item measure of gross mobility based on the work by Rosow-Breslau; and a five item measure of basic strength and range of motion developed by Nagi. Analysis was done by bivariate and multivariate models. Results showed that social activities (hazard ratio 0.88; P=0.024) and productive activities (0.81; P<0.001) remained significant independent predictors of survival and fitness activities (0.92; P=0.194) fell below significance. The results indicated that the beneficial impact of productive activity remains significant (0.92; P=0.003). Further analyses revealed that no single activity was driving the association of activity types and mortality. In summary, these findings build on a substantial body of studies that show the benefits of remaining active in later life. This suggests that activity may confer survival benefits through psychosocial pathways. Social and productive activities that require less physical exertion may complement exercise programs and may constitute alternative interventions for frail elderly people [31].

To rule out how change in level of physical activity after middle age influences mortality and to make comparison with the effect of smoking cessation, a population based cohort study was conducted in Sweden. Participants were 2205 men aged 50 in

1970-3 who were re-examined at ages 60, 70, 77, and 82 years. Data were collected using survey method. Study used Cox's proportional hazards regression with delayed entry to find the association between physical activity and mortality. Results revealed that the absolute mortality rate was 27.1, 23.6, and 18.4 per 1000 person years in the groups with low, medium, and high physical activity, respectively. The relative rate reduction attributable to high physical activity was 32% for low and 22% for medium physical activity. Men who increased their physical activity level between the ages of 50 and 60 continued to have a higher mortality rate during the first five years of follow-up (adjusted hazard ratio 2.64, 95% confidence interval 1.32 to 5.27, compared with unchanged high physical activity). After 10 years of follow-up their increased physical activity was associated with reduced mortality to the level of men with unchanged high physical activity (1.10, 0.87 to 1.38). The reduction in mortality associated with increased physical activity (0.51, 0.26 to 0.97, compared with unchanged low physical activity) was similar to that associated with smoking cessation (0.64, 0.53 to 0.78, compared with continued smoking). The study concluded increased physical activity in middle age is eventually followed by a reduction in mortality to the same level as seen among men with constantly high physical activity. Further research should investigate whether and to what extent increased physical activity affects mortality in the period soon after the change. In addition, the effects in other age groups and in women need to be studied [32].

A cohort study attempted to explore the association between change in physical activity levels and fruit and vegetable consumption and changes in self-reported overall health and mental health, of residents living in deprived English communities. Household survey conducted in 2002 and repeated in 2004. Setting was thirty-nine deprived UK communities in areas participating in the New Deal for

Communities (NDCs), a major government funded community development initiative. A sample of 848 addresses were randomly selected in each area (a total of 33 072). The interviewer then selected at random: one property at each sampled address, one household within each sampled property and one individual normally resident at that address (aged 16 and over).Participants were ten thousand four hundred and nineteen residents in NDC areas and neighboring comparator areas. Main results revealed that overall levels of physical activity and fruit and vegetable consumption were low but a large positive change in diet or levels of physical activity was associated with a significant change in mental health (2.86 and 2.71, respectively: $P < 0.01$). Smaller, but also statistically significant, changes were found in physical health (0.07 and 0.05, $P < 0.01$). Specific dimensions of mental health which showed a large change in association with lifestyle change were those associated with 'peacefulness' and 'happiness'. These findings suggest that, for residents of these neighborhoods, positive lifestyle changes such as increasing physical activity levels and increase in fruit and vegetable consumption are associated with positive changes in mental health [33].

A randomized controlled trial was conducted to evaluate and compare the effectiveness and cost-effectiveness of a leisure centre-based exercise program, at Copthall Leisure Centre in Barnet. Participants were aged between 40 and 74 years, not physically active and with at least one cardiovascular risk factor. The 943 patients were assessed in cohorts and randomized to one of the following three arms: a 10-week program of supervised exercise classes,; a 10-week instructor-led walking program, an advice-only control group who received tailored advice and information on physical activity. After 6 months the control group was rerandomised to one of the other trial arms. There was a net increase in the proportion of participants achieving at least 150 minutes per week of at least moderate activity in the sport/leisure and

walking categories in all three study groups: at 6 months, the net increases were 13.8% in the leisure centre group, 11.1% in the walking group and 7.5% in the advice-only group. There were significant reductions in systolic and diastolic blood pressure in all groups. There were also significant and sustained improvements in cardio respiratory fitness and leg extensor power, and small reductions in total and low-density lipoprotein cholesterol in all groups. All three groups showed improvement in anxiety and mental well-being scores 6 months after the beginning of the trial. Costs to the participants amounted to pound 100 for the leisure centre scheme and pound 84 for the walking scheme, while provider costs were pound 186 and pound 92, respectively. The results of this trial suggest that referral for tailored advice, supported by written materials, including details of locally available facilities, supplemented by detailed assessments may be effective in increasing physical activity. Further research should include an updated meta-analysis of published exercise interventions using the standardized mean difference approach[34].

To study the effectiveness of the exercise program over 2 years, a randomized controlled trial was conducted in New Zealand among women from both the control group and the exercise group completing a 1-year trial (213 out of the original 233). The same were invited to continue for a further year. Falls and compliance to the exercise program were monitored for 2 years. 81 (74%) in the control group and 71 (69%) in the exercise group agreed to continue in the study. After 2 years, the rate of falls remained significantly lower in the exercise group than in the control group. The relative hazard for all falls for the exercise group was 0.69 (95% confidence interval 0.49-0.97). The relative hazard for a fall resulting in a moderate or severe injury was 0.63 (95% confidence interval 0.42-0.95). Those complying with the exercise program at 2 years had a higher level of physical activity at baseline, were more likely

to have reported falling in the year before the study and had remained more confident in the first year about not falling compared with the rest of the exercise group. The findings concluded that falls and injuries can be reduced by an individually tailored exercise program in the home. For those who keep exercising, the benefit continues over a 2-year period [35].

With a goal to establish the relative effectiveness and cost of providing a home-based exercise program versus home-based exercise supplemented with an 8-week class-based exercise program, a randomized clinical trial was conducted among 214 patients, who met the American College of Rheumatology's classification of knee osteoarthritis. The subjects were selected from referrals from the primary and secondary care settings. Both groups were given a home exercise program. Assessments of loco motor function, using a timed score of three loco motor activities, walking pain and self-reported disability with the Western Ontario and McMaster's Universities osteoarthritis index (WOMAC) were made. Patients were assessed before and after treatment, and also at 6- and 12-month follow-ups. The economic evaluation looked at health service resource use and assessed cost-effectiveness by relating differential costs to differences in quality-adjusted life-years (QALYs) based on patients' responses to the EuroQol-5 Dimensions. Patients from the supplemented group demonstrated significantly greater improvement in loco motor function and decrease in pain while walking at all follow-ups. The supplemented group also demonstrated smaller but significant improvements in balance, strength, WOMAC score, and the physical function and pain dimensions of the Short Form-36. However, costs were slightly lower and QALY gains slightly higher in the group with the supplementary class-based program. The supplementation of a home-based exercise program with a class-based exercise

program led to superior improvement in the supplemented group. It is recommended that future research investigates methods of increasing compliance with home exercise program and evaluates the impact of these interventions in the primary care setting, where most patients with knee osteoarthritis are managed [36].

An intervention study was conducted in Bangladesh, involving 1135 elderly persons (>60 years) from eight randomly selected villages, four each of an intervention and a control area. The objective of the study was to assess the impact of health education in managing self-reported arthritis-related illness among elderly persons in rural Bangladesh. The analyses include 839 elderly persons who participated in both pre- and post-intervention surveys (intervention area: n5425, control area: n5414).Participants of the intervention area were further categorized as compliant (n5315) and non-compliant (n5110) based on adherence to the intervention instructions. The intervention that lasted for 15 months comprised home-based physical exercise, dietary instructions and other aspects of management. Results show that although there was no significant difference in self-reported arthritis-related illness between the compliant and non-compliant groups at baseline, it was significantly lower in the compliant group (71%) at post-intervention compared with the non-compliant (81%). Related monthly expenditure on treatment was significantly reduced in the compliant group (from Taka 104 to Taka 52) but not in the other two groups. Logistic regressions further showed that the control group had a higher probability of increased treatment-related expenditure compared with the compliant group (OR 2.0,95% CI 1.4–2.8) [37].

With a view to examine whether an exercise program can prevent disability in activity of daily living (ADL) a randomized, controlled trial was carried out among two hundred and fifty participants. The subjects were assigned to an aerobic exercise

program, a resistance exercise program, or an attention control group. A physical disability questionnaire was the tool used in this study. Various statistical analysis methods like χ^2 statistics, 1-way analyses, cox proportional hazards analysis, multivariate analysis, primary analyses, and secondary analyses were used for this study. The results showed that both exercise prevented ADL disability; the relative risks were 0.60 (P=.04) for resistance exercise and 0.53 (P=.009) for aerobic exercise. Finally the study suggests that a physical exercise program may be an effective strategy for increasing the active life expectancy of older adults [38].

The goal of a descriptive study conducted among African American women was, to determine the relationships among reported exercise levels and perceived benefits of and barriers to exercise. Types of exercise included in the questionnaire were stretching, vigorous exercise and recreational physical activities. The study utilized a sample of 30 over 60 years of age. The level of exercise was measured using the Exercise scale of the Health promotion Life style profile; the perceptions of the importance of exercise were measured by Exercise Benefits/ Barriers scale and one open-ended question on perceived barriers. A significant relationship was found between reported exercise levels and perceived benefits of and barriers to exercise ($p<0.001$) using Spearman's rho for original data. Results of this study support the need for community based exercise programs for specific populations as a daily health- promotive activity [39].

A randomized controlled trial study was designed among 173 people (mean age 74.9 years, SD 10.8) of two public hospital outpatient rehabilitation services of Australia, to establish the effects of group exercise on mobility and strength. Participants were screened using physical activity readiness questionnaire. The interventions were five- week, twice weekly 'circuit style' group exercise program.

Using a series of four point scale items participants were asked to rate their impression of the exercise program. In data analysis, linear regression (ANCOVA) models with baseline scores were used. The results showed that, exercise participants had improved significantly on measure of balance with stepping, sit to stand and gait. Exercise participant averaged 1.6 more steps on 15-second step test (p=0.005), walked an average of 0.12 m/s faster (p=0.002). Exercise participants also averaged 0.04 more sit to stands/second, (p=0.037) and walked an average of 320.9 meters further in 6 minutes (p=0.005). The investigator therefore recommends that exercise classes for people with movement difficulties should be offered routinely by outpatient rehabilitation services [40].

Summary

This chapter has dealt with the review of literature related to wellbeing, level of physical activity and benefits of physical activities of elderly. The review has helped the investigator in gaining insight into the various aspects under study.

METHODOLOGY

4. METHODOLOGY

This chapter deals with the methodology selected for the study. Methodology of research indicated the general pattern for organizing the procedure, for gathering valid and reliable data for investigation [41].

This chapter includes research approach, research design, setting of the study, description of population, sampling technique, development of tool, validity and reliability of tool, pilot study, procedure for data collection and the plan for data analysis.

Research approach

A quasi experimental approach was adopted in this study to determine the effectiveness of regular physical activities in promoting well being among elderly population (60-70 years) in a selected old age home, Mangalore.

Research design

Research design spells out the basic strategies that the researcher adopts to develop information that is accurate and interpretable. It provides a path for the investigator to obtain answers to the research problem .Selection of the design depends on the purpose and variables of the study [42].

Pre-test post-test control group design was adopted for the present study. This study is composed of two groups: an experimental group and a control group.

The design is as follows:

E O1 x O2

C O3 O4

E = Experimental group

C = Control group

O_1 = Pre-test (experimental group)

O_2 = Post- test (experimental group)

O_3 = Pre- test (control group)

O_4 = Post- test (control group)

X = Regular physical activities

Sample	Phase I	Phase II (Treatment)	Phase III
	Pre- test	Intervention	Post- test
Experimental Group	Assessment of level of physical activity using physical activity assessment tool. Assessment of level of wellbeing using wellbeing assessment tool	Administration of regular physical activity: -Walking - Climbing stairs	Assessment of level of wellbeing using wellbeing assessment tool
Control group	Assessment of level of physical activity using physical activity assessment tool. Assessment of level of wellbeing using wellbeing assessment tool.		Assessment of level of wellbeing using wellbeing assessment tool

Figure 2: Schematic representation of study design

Setting of the study

Setting is the physical location and conditions in which data collection take place in a study [42].

The setting for the study was Little Sisters of Poor Home and Mother Theresa's Charity Home Mangalore, Karnataka. The total strength of old people in these two old age homes were 86 and 55 respectively.

Population

The population is all elements (individual, object or substances) that meet certain criteria for including in a study [43].

Old people (60-70yrs) were considered as the population under study.

Sample and sampling technique

Sample is a subset of population selected to participate in a research study [43].

In the present study the sample consisted of 40 old people, 20 in the experimental group and 20 in the control group.

Two old age homes were selected; one for experimental group (Little Sisters of Poor home) and the other for control group (Mother Theresa's Charity home). In order to select samples for experimental group the tool was administered to 40 old people (60-70yrs) who fulfilled inclusion and exclusion criteria in the selected old age home. Among them five samples had high physical activity and moderate wellbeing, three samples had both high level of physical activity and wellbeing and one sample had moderate physical activity and high wellbeing. So those samples were rejected. From the remaining 31 samples 20 were randomly assigned into experimental group.

In order to select the samples for control group tool was administered to 33 old people (60-70yrs) who fulfilled inclusion and exclusion criteria in the selected old age home. Among them six samples were having high physical activity level and moderate wellbeing and so they were rejected. From the remaining 27 samples 20 were randomly assigned into control group.

Criteria for selection of sample

- Elderly subjects in the age group of 60 –70 years.
- Elderly subjects with moderate and low level of functioning.
- Elderly subjects with moderate and low wellbeing.
- Elderly subjects considered as fit by doctor appointed by geriatric home.
- Elderly people who are willing to participate in the study.

Exclusion Criteria

- Elderly subjects who have disability ailments such as bedridden patients, can walk only with support, previous history of cardiac disease and those who are on wheel chair.
- Elderly people whose pulse is less than 60 beats / minute or more than 100 beats/ minute, a systolic blood pressure of <100 or more than 190mm of Hg, diastolic blood pressure of less then 60 or more than 100mm of Hg and who are breathless even in sitting position/ exacerbation of COPD.
- Elderly subjects with both high functioning and wellbeing level or if any one of these level is high.

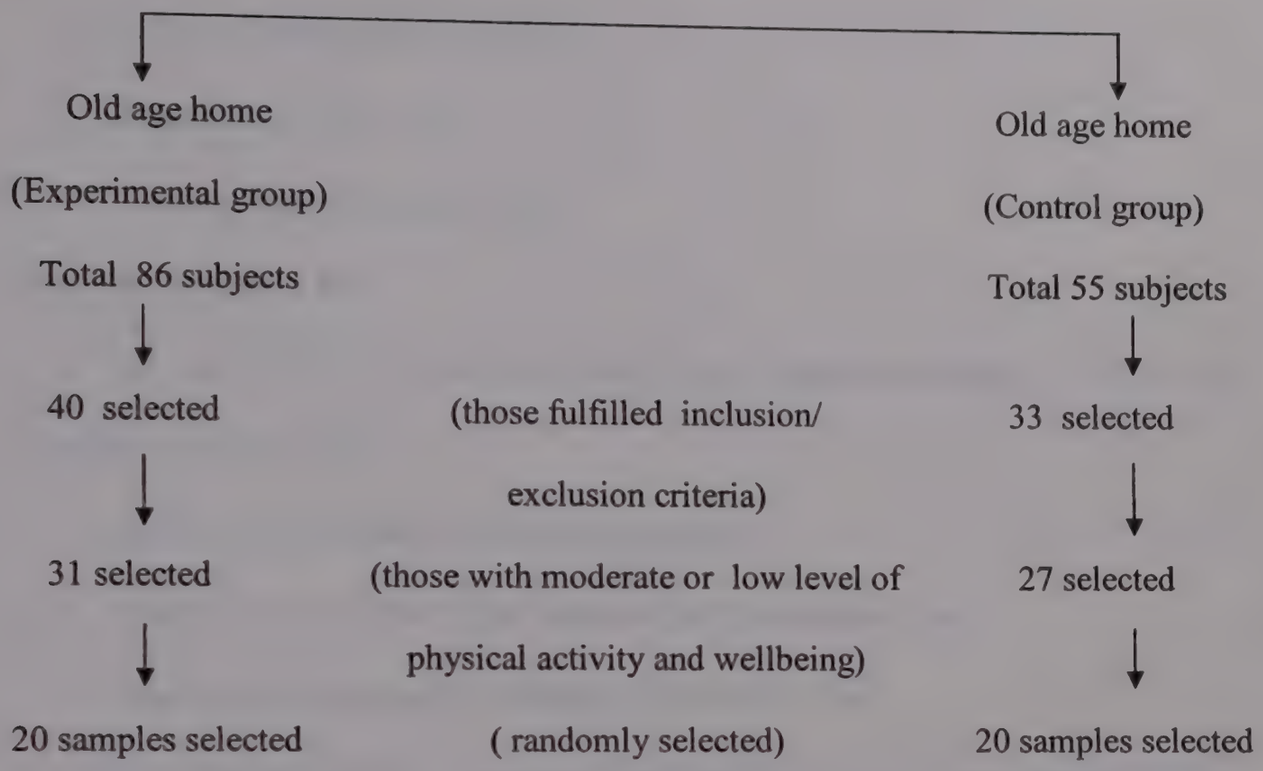

Figure 3: Schematic representation of sampling technique

Selection and development of tool

Data collection tools are the procedures or instruments used by the researcher to observe, measure the key variables in the research problem [43].

Based on the objectives base line proforma, physical activity assessment tool and wellbeing assessment tool were prepared by referring to related literature and consulting the experts. The tool was written in English and Kannada (Annexure 10 and 11).

Development of the Tool

The tool was developed after the:

- Review of literature on relevant topic.
- Discussion with experts and guide.

Steps involved in the development of the tool were:

- Preparation of the first draft.
- Development of criteria check list.

- Content validation of the tool.
- Reliability of the tool.
- Preparation of the final draft.

Description of the tool

The tool for data collection had three sections–sections I, II and III. (Annexure 10 and 11).

Section I consisted of baseline proforma.

Section II consisted of physical activity assessment tool.

Section III consisted of wellbeing assessment tool.

The physical activity assessment tool had 25 items and was categorized as:

- Personal hygiene
- Dressing
- Movement
- Feeding
- Toileting

Each of these items had 3 columns for responses (cannot do, can do but; with little difficulty, can do without any difficulty) with scale value of 0, 1 & 2.

According to the total score obtained, it was arbitrarily classified in to three levels

Low functioning level - <17

Moderate functioning level - 17-34

High functioning level - >34

The wellbeing assessment tool had 29 items and was categorized as:

- Physical health
- Psychosocial health
- Spiritual health

Each of these items had 2 columns for responses (yes, no) with scale value of 0 & 1.

According to the total score obtained, it was arbitrarily classified into three levels

Low wellbeing level – <10

Moderate wellbeing level – 10-20

High wellbeing level – >20

Validity of tool

The validity refers to the degree to which an instrument measures what it intended to measure[43].

The prepared tool along with the objectives and operational definition and hypotheses was sent to nine experts; (Annexure 12) six experts from the field of Community Health Nursing, one from the field of Psychiatric Nursing, one Psychologist and one Statistician.

The permission for tool validation was obtained by sending a requisition letter (Annexure 3) and acceptance form (Annexure 4). The experts were requested to give their opinion and suggestion regarding each item in the tool in terms of Strongly Agree (SA), Agree (A) and Disagree (DA) (Annexure 5 and 6). Some of the suggestions were to divide the tool into three sessions and some opinions were given in sentence constructions. The recommendations and

suggestions of the experts were considered in the modification of the items of the tool.

Reliability of tool

Reliability is the degree of consistency with which an instrument measures the attribute it is designed to measure [14].

In order to establish the reliability, the tool was administered to six old people (60-70yrs). Reliability of physical activity assessment tool was established by test retest method using Karl Pearson's correlation co-efficient. Reliability of wellbeing assessment tool was established by split half method using Spearman-Brown prophecy formula. The correlation co-efficient of physical activity assessment tool was 0.76 and wellbeing assessment tool was 0.83.This indicates that the tool was highly reliable.

Pilot study

Pilot study is a small scale version or trial run done in preparation for a major study [14]. The main objective of the pilot study was to help the researcher to become familiar with the use of tool and to find out the difficulties to conduct the main study.

The pilot study was conducted in St. Antony's poor home, Mangalore from 9/7/09 to 29/7/09. The investigator obtained written permission (Annexure 1) from the concerned authority prior to the study. The purpose of the study was explained to the sample and confidentiality was assured (Annexure 8 and 9). Random assignment of old people to the experimental and control group was used in the study. It took three days to administer the tool to selected sample for the study. On the fourth day onwards regular physical activities were administered to the experimental group for two weeks. The activities were given

in the morning session for duration of 20 minutes. While giving the intervention researcher found that there was a risk for fall among elderly. Researcher also found difficulty in supervising personally all the samples at a time. So after consultation with the guide, the researcher selected an assistant (a colleague) and trained her on patient safety. For the remaining part of the study, the researcher's assistant helped to protect the subjects from falls and injury. Post-test was conducted after two weeks for both the experimental and control group. Another problem faced by the investigator was the chance of contamination among the subjects. So it was decided to conduct the main study in two different settings for the experimental and control group. The collected data was analyzed by using descriptive and inferential statistics. The significance of difference in the pre-test and post-test was found by paired't' test. The significance of difference in the experimental and control group was found by unpaired't' test. The investigator found that the study was feasible and practicable.

Method of data collection

Data collection is the gathering of information needed to address a research problem [43].

Data was collected from 5th August to 28th August 2009.Prior to the data collection, written permission was obtained from the concerned authority (Annexure 2) of selected old age homes. Consent was obtained (Annexure 8 and 9) from the selected sample. The tool was administered to 73 old peoples of selected old age homes. On the first six days structured interview schedule was conducted to both experimental and control group. Their level of physical activity and wellbeing was measured using the tool. Those who scored high in any one level or both were rejected from the study. Intervention was done for

two weeks in the morning for duration of 20 minutes. Due to difficulties encountered during the pilot study, researcher divided the samples into four groups so as to minimize risk for falls and injury. Each group consisted of four old people and physical activity was given to them. The investigator also involved the trained assistant in the study area to protect the subjects from falls and injury. Post-tests were given from the very next day and it took four days to complete.

Procedure of data collection

- Privacy was maintained.
- Purpose of data collection explained to the sample.
- Samples were made to feel comfortable and relaxed.
- The tool in the form of interview schedule was administered to the samples.

Plan for data analysis

It was planned to use descriptive and inferential statistics to analyze the data. According to the total score obtained, the level of physical activity and wellbeing would be classified as high, moderate and low. To compute the data a master sheet would be prepared by the investigator. Baseline proforma containing sample characteristics would be analyzed using frequency and percentage. Pictorial and graphic format would be used to describe the wellbeing scores. The level of physical activity and wellbeing would be calculated using frequency, range, mean, median and standard deviation. Paired't' test was considered suitable to find out the effectiveness of regular physical activities in experimental group. To compare the level of wellbeing between experimental

and control group unpaired't' test was considered suitable at 0.05 level of significance.

Summary

This chapter dealt with the research approach, research design, setting of the study, population, sample, sampling technique, criteria for selection of the sample, selection and development of the tool, description of the tool, validation of the tool, reliability of the tool, pilot study, method of data collection and plan for data analysis .The following chapter deals with the results of the study.

RESULTS

5. RESULTS

The research data need to be processed and analyzed in some systemic fashion, so that trends and pattern of relationships can be detected. Data analysis is the "categorizing, ordering, manipulating and summarizing of data to obtain answers to research questions"[44]. The purposes of this chapter are to compare, test the proposed relationships and draw inferences related to the findings of the study. The data collected from the sample of 40 old people to assess the effectiveness of regular physical activities in promoting wellbeing are presented and analyzed according to the objectives of the study.

Objectives of the study:

- To determine the level of physical activity among elderly population as measured by physical activity assessment tool.
- To determine the wellbeing of elderly population as measured by wellbeing assessment tool.
- To determine the effectiveness of regular physical activities in the wellbeing of elderly population in the experimental group.
- To compare the post-test wellbeing scores of elderly population in the experimental and control group.

Organization of findings

The analyses of the data from the study are presented as follows:

PHASE I

Section A: Level of physical activity among elderly

Section B: Level of wellbeing among elderly

PHASE II

Section C: Demographic characteristics of the sample.

Section D: Level of physical activity among elderly in experimental and control group

Section E: Level of wellbeing among elderly in experimental and control group

Section F: Effectiveness of regular physical activities in experimental group.

- Comparison of pre-test and post-test wellbeing scores in the experimental group.
- Mean, SD, mean difference and 't' value of pre-test and post-test wellbeing scores in the experimental group.

Section-G: Comparison of level of wellbeing between experimental and control group.

- Mean, SD, mean difference and 't' value of post-test wellbeing scores in the experimental group and control group

PHASE I

Section A: Level of physical activity among elderly

Level of physical activity was assessed by using a physical activity assessment tool and was analyzed using descriptive statistics as presented in table 1

Table 1: Frequency and percentage distribution of sample according to the level of physical activity

N=73

Level of wellbeing	Frequency	Percentage
Low	-	-
Moderate	59	81
High	14	19

Data in table 1 shows that majority of elderly (81%) had moderate level of physical activity; where as only 19 % of them had high level of physical activity.

Section B: Level of well being among elderly

Level of well being was assessed by using a well being assessment tool and was analyzed using descriptive statistics as presented in table 2.

Table 2: Frequency and percentage distribution of sample according to the level of well being.

N=73

Level of wellbeing	Frequency	Percentage
Low	5	7
Moderate	64	87
High	4	6

Data in table 2 shows that majority of elderly (87%) had moderate level of wellbeing, where as only very few had low and high level of wellbeing.

PHASE II

SECTION C

This section deals with the description of sample characteristics and is explained in frequency and percentage and presented in table 3.

Table 3: Frequency and percentage distribution of sample according to demographic characteristics.

N_1=20, N_2=20

Sl No.	Demographic variables	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1	**Age in years**				
	A)60-65 yrs	11	55	8	40
	B)66-70 yrs	9	45	12	60
2	**Sex**				
	A)Male	8	40	9	45
	B)Female	12	60	11	55
3	**Marital status**				
	A)Married	14	70	14	70
	B)Single	1	5	2	10
	C)Divorce	1	5	1	5
	D)Widow	3	15	3	15
	E)Widower	1	5	-	-
4	**Number of children**				
	A)None	1	5	2	10
	B)One	-	-	-	-
	C)Two	-	-	-	-
	D)Above two	19	95	18	90
5	**Education**				
	A)Illiterate	2	10	1	5
	B)Primary school	11	55	13	65
	C)Middle school	3	15	4	20
	D)High school	4	20	2	10
	E)PUC and above	-	-	-	-
6	**History of chronic diseases**				
	A) Only Hypertension	2	10	3	15
	B) Only Diabetes mellitus	-	-	1	5
	C) Only Arthritis	12	60	11	55
	D) Only Asthma	2	10	1	5
	E)Any other specify	2	10	1	5
	F)More than one of the above	2	10	3	15

The data presented in table 3 shows the following findings:

In experimental group highest percentage (55%) of elderly were in the age group 60-65 years, where as in control group, majority (60%) of elderly were in the

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age group 66-70 years. Highest percentage of the subjects (60%) in the experimental group and in the control group (55%) was females. Majority of the subjects (70%) in the experimental group and the control group (70%) were married. Most of the elderly (95%) in the experimental group and in the control group (90%) had children above two. Highest percentage (55%) of elderly in the experimental group and control group (65%) had primary education. Majority of elderly (60%) in the experimental group and control group (55%) suffered from arthritis.

Section D: Level of physical activity among elderly in experimental and control group

Table 4: Frequency and percentage distribution of sample according to the level of physical activity in experimental and control group

$N_1=20$, $N_2=20$

Level of physical activity	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Low	-	-	-	-
Moderate	20	100	20	100
High	-	-	-	-

Data in table 4 shows that in experimental and control group all elderly (100%) had moderate level of physical activity.

Table 5: Range, mean, median and standard deviation of pretest physical activity scores of elderly in experimental and control group.

$N_1=20, N_2=20$

	Experimental group				Control group			
	Range	Mean	Median	Standard deviation	Range	Mean	Median	Standard deviation
Pre test	26-34	29.7	29	2.51	26-34	29.65	29.5	2.50

Data in table 5 shows that mean, median and standard deviation of pre-test physical activity scores of elderly in the experimental and control group were 29.7, 29, 2.51, 29.65, 29.5 and 2.50 respectively.

Table 6: Frequency, percentage, and cumulative frequency distribution of pre-test physical activity scores of elderly in experimental and control group

$N_1=20, N_2=20$

Range	Pre-test							
	Experimental group				Control group			
	f	%	cf	%	f	%	cf	%
20-25	-	-	-	-	-	-	-	-
25-30	11	55	11	55	11	55	11	55
30-35	9	45	20	100	9	45	20	100

Data in table 6 shows that in pre-test, both in the experimental and control group, the highest percentage (55%) of the elderly had pre-test physical activity scores in the range of 25-30, and least percentage (45%) of elderly had the score in the range of 30-35.

Section E: Level of wellbeing among elderly in experimental and control group

Table 7: Frequency and percentage distribution of sample according to their level of wellbeing in experimental and control group

$N_1=20$, $N_2=20$

Level of wellbeing	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Low	2	10	1	5
Moderate	18	90	19	95
High	-	-	-	-

Data in table 7 shows that both in experimental and control group, most of the elderly (90%, 95%) had moderate level of wellbeing.

Table 8: Frequency and percentage distribution of sample according to the level of wellbeing in the experimental and control group before and after regular physical activity.

$N_1=20$, $N_2=20$

Level of wellbeing	Pre-test				Post-test			
	Experimental group		Control group		Experimental group		Control group	
	f	%	f	%	f	%	f	%
Low	2	10	1	5	-	-	1	5
Moderate	18	90	19	95	19	95	19	95
High	-	-	-	-	1	5	-	-

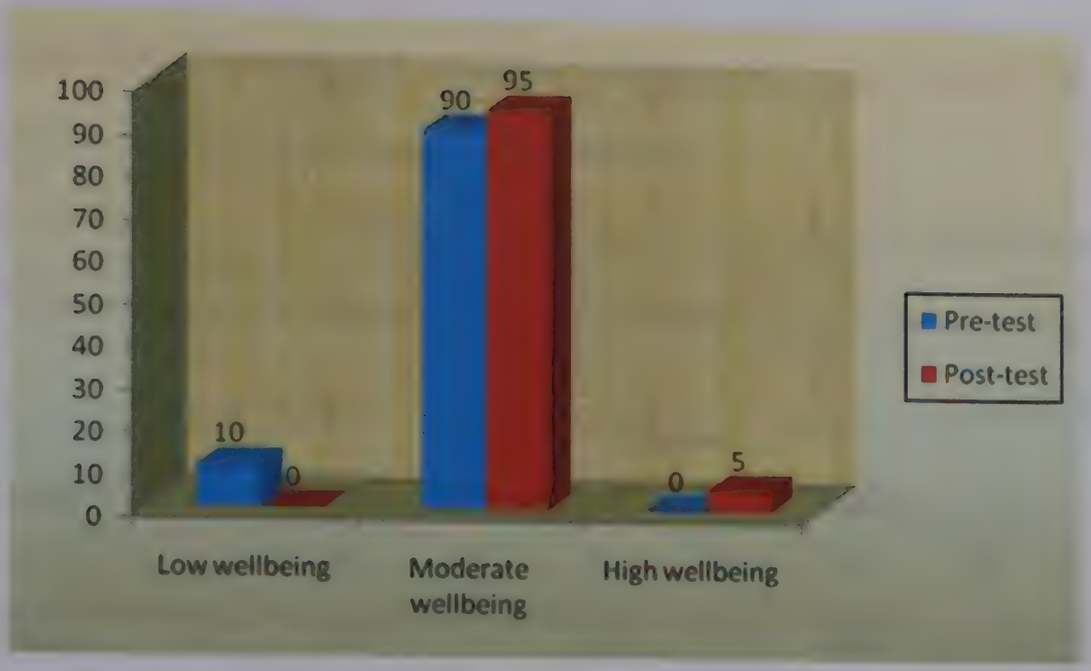

Figure 4:-Bar diagram showing the pre-test and post-test level of wellbeing in experimental group.

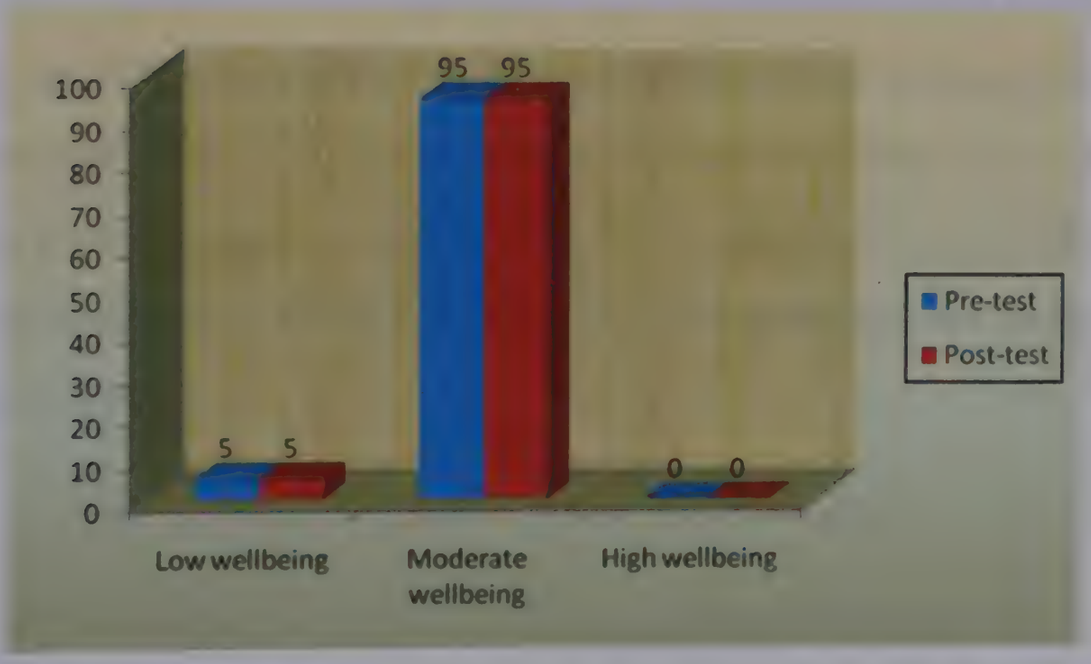

Figure 5:-Bar diagram showing the pre-test and post-test level of wellbeing in control group

Data presented in table 8 ,figure 4 and 5 shows that in experimental group 10% of the sample had low wellbeing and 90% of the sample had moderate wellbeing in the pre-test, where as in post-test 95% of them had moderate wellbeing level and 5% acquired high wellbeing level .In control group pre-test, 5% of sample had low

wellbeing, 95% of sample had moderate wellbeing and none of them had high wellbeing. It remained same even in the post-test also.

Table 9: Frequency, percentage, and cumulative frequency distribution of sample according to pre-test wellbeing scores in experimental and control group.

$N_1=20, N_2=20$

Range	Pre-test							
	Experimental group				Control group			
	f	%	cf	%	f	%	cf	%
5-10	2	10	2	10	1	10	1	10
10-15	10	50	12	60	11	55	12	60
15-20	8	40	20	100	8	40	20	100

The data in table 9 shows that in pre-test, in the experimental group, the highest percentage (50%) of the elderly had pre-test wellbeing score in the range of 10-15, and least percentage (10 %) of the elderly had the score in the range of 5-10. In the control group, the highest percentage (55%) of the elderly had pre-test wellbeing score in the range of 10-15, and least percentage (10 %) of the elderly had the score in the range of 5-10.

Table 10: Range, mean, median and standard deviation of pre-test and post-test wellbeing scores in experimental and control group.

$N_1=20, N_2=20$

Group		Range of scores	Mean	Median	Standard deviation
Experimental group	Pre-test	9-18	13.75	13.5	2.69
	Post-test	10-21	15.8	16	2.61
Control group	Pre-test	9-18	13.8	13.5	2.50
	Post-test	9-18	13.7	13.5	2.71

Data presented in table 10 shows that, in experimental group mean post-test score (15.8+/- 2.61) was higher than that of mean pre-test score (13.75+/-2.69) where as in control group , mean post-test wellbeing score (13.7+ /-2.71) was almost similar to the mean pre-test wellbeing score (13.8+ /-2.50) .It is also observed that mean post-test scores of experimental group was higher than mean post-test scores of control group.

Table 11: Frequency, percentage, and cumulative frequency of wellbeing scores before and after regular physical activities in experimental group

N=20

	Pre-test				Post-test			
Range	**f**	**%**	**cf**	**%**	**f**	**%**	**cf**	**%**
5-10	2	10	2	10	-	-	-	-
10-15	10	50	12	60	5	25	5	25
15-20	8	40	20	100	14	70	19	95
20-25	-	-	-	-	1	5	20	100

Data presented in table 11 shows that ,in pre-test highest percentage (50%) of sample in the experimental group had wellbeing scores in the range of 10-15,where as in post-test majority (70%) of sample had wellbeing scores in the range of 15-20.

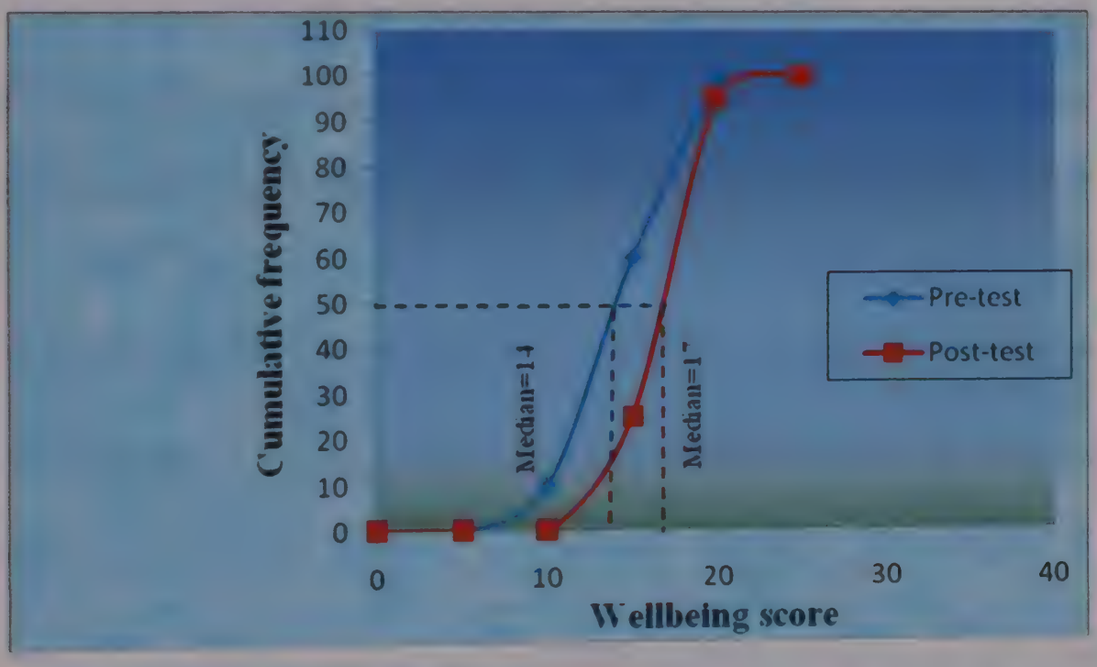

Figure 6: Ogive representing pre-test and post-test wellbeing scores of the experimental group

Data presented in figure 6 shows that, the pre-test Ogive lies to the left of the post-test Ogive over the entire range which indicates that the pre-test wellbeing scores were constantly lower than the post-test wellbeing scores. The difference of 2.5

between the pre-test and post-test median shows that the regular physical activities were effective in promoting wellbeing.

Table 12: Frequency, percentage, and cumulative frequency distribution of wellbeing scores after regular physical activities in experimental and control group

N_1=20, N_2=20

	Experimental group				Control group			
Range	**f**	**%**	**cf**	**%**	**f**	**%**	**cf**	**%**
5-10	-	-	-	-	1	5	1	5
10-15	5	25	5	25	12	60	13	65
15-20	14	70	14	95	7	35	20	100
20-25	1	5	20	100	-	-	-	-

Data in table 12 shows that, after physical activity in experimental group majority (70%) of sample had wellbeing scores in the range of 15-20, where as in control group highest percentage (60%) of sample had wellbeing scores in the range of 10-15.

Section F: Effectiveness of regular physical activities in experimental group

❖ **Comparison of pre-test and post-test wellbeing score of experimental group**

To compare the pre-test and post-test wellbeing scores paired't' test was used. In order to test the statistical significance the following null hypothesis H_{01} was stated

H_{01}: The mean post-test wellbeing score will not be significantly higher than the mean pre-test score in the experimental group.

Table 13: Mean, standard deviation, mean difference and't' value of pre-test and post-test wellbeing scores in the experimental group.

N= 20

Test	Mean score	Standard deviation	Mean difference	't' value
Pre-test	13.75	2.69	2.05	6.583*
Post-test	15.8	2.60		

t_{19}=1.729, $p < 0.05$ *significant

Data in table 13 shows that ,the mean post-test wellbeing score (15.8) was higher than mean pre-test well- being score (13.75).The calculated 't' value (t= 6.583) was greater than the table value (t_{19} = 1.729) at 0.05 level of significance. Hence null hypothesis H_{01} was rejected and research hypothesis was accepted.

Analysis of area wise mean pre-test post-test wellbeing score

To determine the significant difference in the area wise pre-test and post-test wellbeing scores paired't' test was computed between each area and presented in the table used.

Table 14: Area wise range of score, mean, mean percentage, standard deviation and 't' value of pre-test post-test wellbeing scores in experimental group.

N= 20

Area	Pre-test				Post-test				
	Range of score	Mean	Mean %	Standard deviation	Range of score	Mean	Mean %	Standard deviation	't' value
Physical health	2-9	4.2	35	2.04	2-9	4.5	38	1.91	2.85*
Psychosocial health	2-9	5.55	43	2.44	4-11	7.3	56	1.95	6.46*
Spiritual health	4	4	100	0	4	4	100	0	0

$t_{19}=1.729$, $p < 0.05$ *significant

Data in table 14 and figure 7 shows that the mean post-test wellbeing scores in the two (physical health and psychological health) out of three areas were higher than the pre-test wellbeing score. Calculated 't' value in the two (physical health and psychological health) out of three areas were significantly higher than the table value ($t_{19}=1.729$) at 0.05 level of significance.

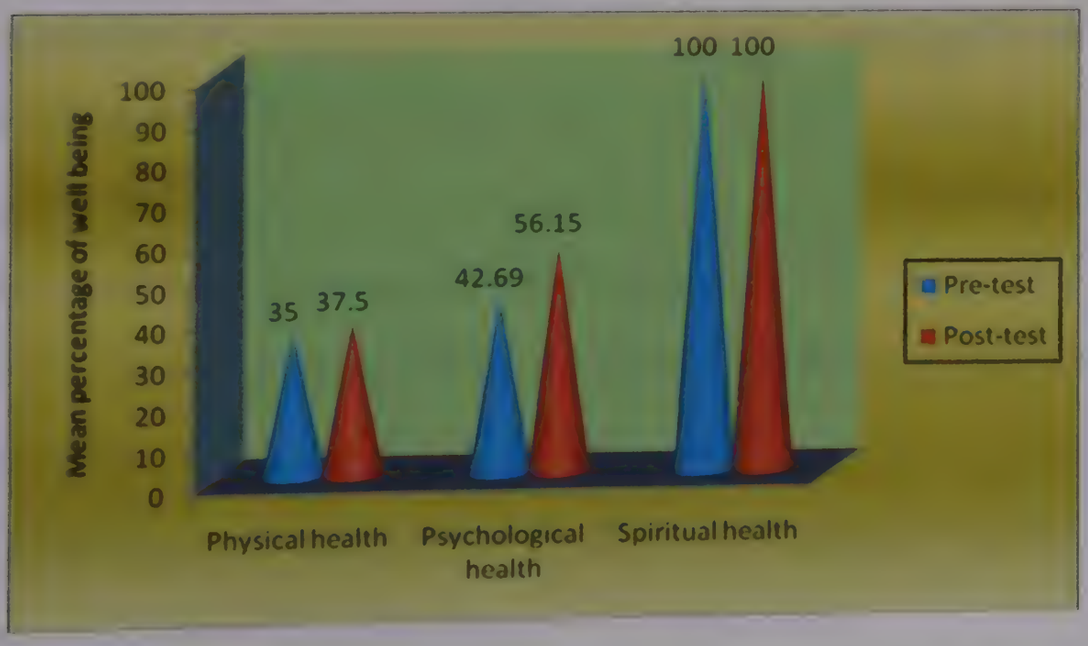

Figure 7:-Cone diagram showing area wise pre-test and post-test wellbeing score in experimental group

Section G: Comparisons of post- test wellbeing scores in the experimental and control group.

To test the statistical significance between the post -test wellbeing scores in the experimental and control group unpaired't' test was computed and the following null hypothesis H_{02} was stated .

H_{02}: There will not be a significant difference between the mean wellbeing score of experimental group and control group after regular physical activities.

Table 15: Mean, SD, mean difference and 't' value of post-test wellbeing scores in the experimental group and control group

$N_1=20, N_2=20$

Group	Mean Score	Standard Deviation	Mean Difference	't' value
Experimental Group	15.8	2.61	2.1	2.498*
Control Group	13.7	2.72		

$t_{38}=2.021, p < 0.05$ *significant

Data in table 15 shows that the mean post-test wellbeing score (15.8) of the experimental group after regular physical activity was higher than the mean post-test wellbeing score (13.7) of control group. The calculated't' value (t = 2.498) was greater than the table value (t_{38} = 2.021) at 0.05 level of significance. Hence null hypothesis H_{02} was rejected and research hypothesis was accepted. This shows that regular physical activity was effective in promoting wellbeing of elderly people.

Summary

This chapter dealt with analysis and interpretation of findings of the study. The data were analyzed by using descriptive and inferential statistics.

DISCUSSION

6. DISCUSSION

Ageing is a slow, progressive and universal process which takes many years to manifest and is associated with various changes in the organ systems. There is slow deterioration of the physical, psychosocial and behavioral systems Nurses must understand the normal ageing process and they must be aware about the unique physical, psychosocial and spiritual factors surrounding the ageing process.

The finding of the study discussed in terms of the objectives of the study and hypothesis are compared and contrasted with those of other similar studies conducted in the Western and Indian settings.

Objectives of the study.

1. To determine the level of physical activity among elderly population as measured by physical activity assessment tool.
2. To determine the wellbeing of elderly population as measured by wellbeing assessment tool.
3. To determine the effectiveness of regular physical activities in the wellbeing of elderly population in the experimental group.
4. To compare the post-test wellbeing scores of elderly population in the experimental and control group.

Hypotheses

H_1: The mean post-test wellbeing score will be significantly higher than the mean pre-test score in the experimental group.

H_2: There will be a significant difference between the mean wellbeing score of experimental group and control group after regular physical activities.

Major findings of the study

Demographic characteristic of the sample

1. In experimental group highest percentage (55 %) of elderly were in the age group 60-65 years, where as in control group majority (60 %) of elderly were in the age group of 66-70 years .
2. Highest percentage of the subjects in the experimental group (60%) and in the control group (55%) was females.
3. Majority of the subjects in the experimental group (70%) and the control group (70%) were married.
4. Most of the elderly in the experimental group (95%) and in the control group (90%) had more than two children.
5. Highest percentage of elderly in the experimental group (55%) and control group (65%) had primary education.
6. Majority of elderly in the experimental group (60%) and control group (55%) suffered from arthritis.

Level of physical activity among elderly

In experimental and control group all elderly (100%) had moderate level of physical activity.

Level of wellbeing among elderly

- In experimental group 10% of the sample had low wellbeing and 90% of the sample had moderate wellbeing in the pre-test, where as in post-test 95% of them had moderate wellbeing level and 5% acquired high wellbeing level .In control group pre-test, 5% of sample had low wellbeing, 95% of sample had moderate wellbeing and none of them had high wellbeing. It remained same in the post-test also.

- It is observed that, in the experimental group the mean post- test score (15.8+/-2.61) was higher than that of mean pre-test score (13.75+ /-2.69) ; where as in control group , mean post-test wellbeing score (13.7+ /-2.71) was almost similar to the mean pre-test wellbeing score (13.8+ /-2.50) .It is also observed that mean post-test scores of experimental group was higher than mean post-test scores of control group, which suggest that the level of wellbeing was consistent in the control group.

Effectiveness of regular physical activity

- The findings of the study revealed a significant difference in the mean wellbeing score of elderly in the experimental group (N=20) before and after administration of regular physical activity. (t_{19}= 1.729, P<0.05)
- There was significant difference in the wellbeing scores of elderly in the experimental group and control group (t_{38}=2.021, $p < 0.05$)

The findings of the present study revealed that there was a significant difference in wellbeing scores before and after administration of regular physical activity in the experimental group. There was also a significant difference in the wellbeing scores of the elderly in the experimental group and control group. This suggests that regular physical activity is effective in promoting wellbeing of elderly.

Discussion of the Findings with Other Studies

Level of physical activity among elderly

In experimental and control group all elderly (100%) had moderate level of physical activity.

These findings are supported by a study conducted in Oslo among 3499 inhabitants to find the associations between neighborhood level violence and physical activity, accounting for somatic health. The main results revealed that 20.5% of the elderly were physically less active [25]. Another study conducted among 848 addresses

of English communities also supports the present study findings. It explores the association between change in physical activity levels and fruit and vegetable consumption and changes in self-reported overall health and mental health. Main results revealed that overall levels of physical activity were low[33].

It can be concluded that very few elderly are having high activity level. This is because elderly people are much more likely to experience physical complaints in response to medications and physiological disturbances. Thus there is a need for exercise programs that are within safe limits and can be applied to the elderly. This helps to make them more active and stable thereby promoting healthy ageing.

Level of wellbeing

In the experimental group (N=20), most (90%) of elderly had moderate wellbeing and remaining 10% of them had low wellbeing where as in the control group (N=20), 95% of the sample had moderate wellbeing and 5% of the sample had low wellbeing before administration of regular physical activity.

These findings are supported by a study conducted among 200 elderly over 60 years to assess morbidity, co-morbidity, and patterns of treatment seeking, and to determine relationship of morbidity with disability, psychological distress, and socio-demographic variables among the elderly population in Northern India. Results showed that , of the total sample, sixty-six per cent of elderly subjects were found to be distressed—physically, psychologically, or both [16].

An explanatory study conducted in Jamaica also supports the findings of the present study. It aimed to identify and explain some of the determinants of well-being among the Jamaican elderly. Results revealed that the general wellbeing of the Jamaican elderly was low (mean of 3.9/14 +/- 2.3) [20] .

It can be concluded that elderly are experiencing deterioration in wellbeing. Wellbeing means happiness experienced in all aspects of one's life. As people become old they lose self-confidence. They develop a sick and dependent role. They neglect their abilities. This leads to reduction in their wellbeing.

Effectiveness of regular physical activities

The findings of the present study showed a significant difference in the mean wellbeing score in the experimental group ($t = 6.583$, $P<0.05$) before and after administration of regular physical activity. There was also a significant difference in the post-test wellbeing scores of experimental and control group ($t_{38} = 2.021$, $P <0.05$). Thus regular physical activity was effective in promoting wellbeing among elderly.

The present study findings are supported by a study conducted among residents living in deprived English communities. It aimed to explore the association between change in physical activity levels and fruit and vegetable consumption and changes in self-reported overall health and mental health. A sample of 848 addresses were randomly selected in each area (a total of 33 072) for the study. Main results revealed that a positive change in diet or levels of physical activity is associated with a significant change in mental health (2.86 and 2.71, $P < 0.01$). Smaller, but also statistically significant, changes were also found in physical health (0.07 and 0.05, $P < 0.01$).[33]

In contrast, a study conducted in United States which attempted to examine the association between social, productive, and physical activity and 13 year survival in 2761 men and women aged 65 and older showed that, social activities (hazard ratio 0.88; $P=0.024$) and productive activities (0.81; $P<0.001$) remained significant

independent predictors of survival where as fitness activities (0.92; P=0.194) fell below significance [31].

This signifies that regular physical activity influences the wellbeing and general health of the elderly.

Summary

This chapter dealt with the discussion of major findings of the study like level of physical activity, level of wellbeing and effectiveness of regular physical activities.

CONCLUSION

7. CONCLUSION

Old age is an irreversible biological phenomenon that eventually terminates with the end of the life of a human being. Elderly people are vulnerable people. They are susceptible to deterioration in physical functioning level and general wellbeing level. The saying 'prevention is better than cure' is applicable to elderly people as well; prevention of diseases and disabilities can be achieved by practicing regular physical activities. Therefore we need to generate awareness among the older adults and must engage them in moderate exercises so that they can improve the quality of the remaining part of their life.

The present study conducted to evaluate the effectiveness of regular physical activities in promoting wellbeing among elderly highlights that the mean post-test wellbeing score (15.8) of experimental group was higher than mean pre-test wellbeing score (13.75).

Comparisons of post-test wellbeing scores in the experimental and control group showed a significant difference (t_{38}=2.021, $p < 0.05$). This showed that regular physical activity was effective in promoting wellbeing of elderly people.

Nursing implications

The present study was conducted to determine the effectiveness of regular physical activities in promoting wellbeing among elderly population in selected old age home, Mangalore. The findings of the study have implication for nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

Quality of life is of central importance to nursing practice. Nurses are dedicated to design interventions to improve not only health status but also wellbeing. It is a widely accepted fact that exercise is related to wellbeing .When

it comes to the elderly, without the shadow of a doubt it can be said that, moderate and light exercises are generally safe for elderly to practice regularly. Nurses, especially the community health nurses not only act as change agents , but also as strict patient advocates in bringing revolutionary changes by means of empowerment through the medium of education and positive leadership. The nurse must be aware of the unique physical, psychological and spiritual issues surrounding the ageing process. The nurse should design intervention program and motivate the elderly people to perform moderate exercises that enable them to achieve healthy ageing. Nursing practice enable the elderly to do their respective roles in an efficient manner. Nurses who work in community need to plan and organize interventions that are virtually risk free. Few examples of such interventions include brisk walking, stair climbing, simple household chores, gardening and deep breathing exercises. Health gains from these interventions are particularly valuable for older people, as they improve the muscle strength, balance and posture.

Nursing education

Nursing education programs should prepare nurses to understand and identify the elderly problems so that they will be able to plan for necessary intervention. Clinical and community experience should be planned to ensure that the student receives enough exposure to meet the challenging demand of ageing population. This can be dealt only when the concept of nursing is conceptualized in the framework of nursing curriculum and students are taught how to enable the older citizens to live a functional, independent and productive life. Nursing education should prepare the nurses to impart health education to all elderly regarding the importance and benefits of regular physical activities

during their hospital and community postings. To some extent, celebration of international day of older persons raises awareness among the public and students regarding the emerging social and public health consequences of ageing. Under the dynamic leadership of experienced public health nurses, the student nurses should be trained to deliver community oriented care and outreach services to the aged to meet their various emotional and social needs.

Nursing administration

The nurse administrators should formulate appropriate policy action in the aspect of health promotion, prevention, treatment of health problems. The administrator can help in the research activities that could facilitate in identification and establishing nursing interventions. The nurse administrator can take the initiative in imparting health information by individual and group teaching in the hospital, and other community settings. Administrator can conduct seminars, workshops and symposium for elderly and their care takers about community based programs that the old can conveniently perform. Administrator is a part of health infrastructure and they have a role in planning, implementation and evaluation of health programs on ageing and health. She should give training to the staff nurses and student nurses to intervene in such a way as to ensure the best possible quality of life for elderly.

Nursing research

One of the main aims of nursing research is to expand and broaden the scope of nursing. Geriatric nursing is the latest challenge in the nursing field. In order to meet the growing demand of older adults, research is needed specially in measuring the quality of their life. The present research was an attempt to measure the effect of regular physical activities on wellbeing of elderly

population. This would provide valuable information to plan health promotion program for elderly.

Limitation

1. Generalizations can be done only for the selected elderly population of selected old age homes.
2. Only those subjects who experienced moderate or low level of physical activity and wellbeing at the time of data collection were selected for the study.

Recommendation

1. A study can be replicated with larger samples drawn from different settings like domestic setting and result can be compared.
2. A study can be done to identify the problems of elderly living in old age homes.
3. A longitudinal study can be conducted with a five years follow up.
4. A planned teaching program can be conducted among elderly and care takers regarding the benefits of various exercise programs.
5. A comparative study can be conducted to assess the physical, psychological and spiritual wellbeing of elderly.
6. A descriptive study can be conducted to assess the level of physical activity and wellbeing of elderly.

Summary

This chapter has brought out various implication of this study and provided recommendation. Studies of this kind should be conducted to yield more reliable results.

SUMMARY

8. SUMMARY

A quasi experimental research approach was used to determine the effectiveness of regular physical activities in promoting well being among elderly population in selected old age home, Mangalore

Objectives of the study.

- To determine the level of physical activity among elderly population as measured by physical activity assessment tool.
- To determine the wellbeing of elderly population as measured by wellbeing assessment tool.
- To determine the effectiveness of regular physical activities in the wellbeing of elderly population in the experimental group.
- To compare the post-test wellbeing scores of elderly population in the experimental and control group.

Hypotheses

H_1: The mean post-test wellbeing score will be significantly higher than the mean pre-test score in the experimental group.

H_2: There will be a significant difference between the mean wellbeing score of experimental group and control group after regular physical activities.

The conceptual framework used for the study was health promotion model proposed by Nola Pender in 1982. Quasi experimental approach with pre-test post-test control group design was used and the study was conducted in two old age homes namely Little sisters of poor home and Mother Theresa's charity home Mangalore, Karnataka. The sampling technique used was simple random sampling. Data collection was done by using baseline proforma, physical activity assessment tool and wellbeing assessment tool. The pilot study was conducted to

assess the feasibility. Pilot study included 20 samples and it was conducted at St. Antony's poor home, Mangalore from 9/7/09 to 29/7/09.

The investigator obtained written permission from the concerned authority prior to the study. Data collection was from 5/8/09 to 28/8/09 August 2009. Sample of the study consisted of 40 elderly in the age group of 60-70 years in selected old age homes. Analysis of the obtained data was planned based on the objectives and hypotheses of the study. Both descriptive and inferential statistics were used for data analysis. Descriptive statistics used were frequency, mean, median, and SD. The significant difference between the mean pre-test and post-test wellbeing scores of experimental group was calculated by paired 't' test. The significant difference of wellbeing scores between experimental and control group was obtained by unpaired't' test. To test the hypotheses the level of significance was set at 0.05 level of significance.

Major findings of the study

In experimental group highest percentage (55%) of elderly were in the age group 60-65 years, where as in control group majority (60%) of elderly were in the age group 66-70 years. Highest percentage of the subjects in the experimental group (60%) and in the control group (55%) was females. Majority of the subjects in the experimental group (70%) and the control group (70%) were married. Most of the elderly in the experimental group (95%) and in the control group (90%) had more than two children. Highest percentage of elderly in the experimental group (55%) and control group (65%) had primary education. Majority of elderly in the experimental group (60%) and control group (55%) suffered from arthritis.

In experimental group ,mean post-test wellbeing score (15.8+ /-2.61) was higher than that of mean pre-test score (13.75+ /-2.69) where as in control group ,

mean post-test wellbeing score (13.7+ /-2.71) was almost similar to the mean pre-test wellbeing score (13.8+ /-2.50) ,which suggest that wellbeing score was consistent in the control group.

The findings of the present study revealed that there was a significant difference in wellbeing scores before and after administration of regular physical activity in the experimental group (t_{19}= 1.729, P<0.05). A significant difference was also found in the comparison of wellbeing scores in the experimental and control group (t_{38}=2.021, $p < 0.05$). This suggests that regular physical activity was effective in promoting wellbeing of elderly.

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ANNEXURE

10. ANNEXURES

Annexure 1

Letter seeking and granting permission to conduct pilot study

Laxmi Memorial College of Nursing

[A Unit of Laxmi Memorial Education Trust (R)]
A J Towers, Balmatta Mangalore - 575 002
Ph 2218626, 2218725 Fax (0824) 2218969

LMCN/ 530/ 2008-09

Date: 09-07-2009

To,

Rev FRANCIS D'SOUZA
ADMINISTRATOR
ST. ANTONY'S POOR HOME
[illegible]

Dear Sir / Madam,

Sub : Permission to conduct a study by our II year M.Sc Nursing student.

This is to inform you that our II yr M.Sc Nursing student **Ms. Riya Jose** is conducting a study on the Topic **"Effectiveness of regular physical activities in promoting well-being among elderly people (60-70 yrs) in a selected old age home, Mangalore".** As a part of her M.Sc Nursing course.

I request you to kindly permit her to conduct a study on the Topic mentioned above at your institution

Hope you will do the needful.

Thanking you,

Yours faithfully,
For **LAXMI MEMORIAL COLLEGE OF NURSING**

PRINCIPAL
Principal
Laxmi Memorial College of Nursing
A.J. Tower, Balmatta
Mangalore - 575 002

Permission to conduct the study
16-7-2009

Annexure 2

Letter seeking and granting permission to conduct research study

Laxmi Memorial College of Nursing

[A Unit of Laxmi Memorial Education Trust (R)]
A J. Towers, Balmatta, Mangalore - 575 002
Ph : 2218626, 2218725 Fax : (0824) 2218969

LMeN/850/2008-09

Date: 09-07-2009

To,

Sr. Rosaline
Sister incharge
Little Sisters of Poor Home
Mangalore

Dear Sir / Madam,

Sub : Permission to conduct a study by our II year M.Sc Nursing student.

This is to inform you that our II yr M.Sc Nursing student **Ms. Riya Jose** is conducting a study on the Topic **"Effectiveness of regular physical activities in promoting well-being among elderly people (60-70 yrs) in a selected old age home, Mangalore".** As a part of her M.Sc Nursing course.

I request you to kindly permit her to conduct a study on the Topic mentioned above at your institution.

Hope you will do the needful.

Thanking you,

Yours faithfully,
For **LAXMI MEMORIAL COLLEGE OF NURSING**

PRINCIPAL
Principal
Laxmi Memorial College of Nursing
A.J. Tower, Balmatta
MANGALORE-575 002

Permission Granted
Sr. Rosaline
25.6.09

Laxmi Memorial College of Nursing

[A Unit of Laxmi Memorial Education Trust (R)]
A. J Towers, Balmatta, Mangalore - 575 002
Ph 2218626, 2218725 Fax (0824) 2218969

LMCN/ 830/ 2008-09

Date: 09-07-2009

To,

SR. MARIE DEANNE MC
SISTER SUPERIOR
MOTHER THERESA'S CHARITY HOME
MANGALORE

Dear Sir / Madam,

Sub : Permission to conduct a study by our II year M.Sc Nursing student.

This is to inform you that our II yr M.Sc Nursing student **Ms. Riya Jose** is conducting a study on the Topic **"Effectiveness of regular physical activities in promoting well-being among elderly people (60-70 yrs) in a selected old age home, Mangalore"**. As a part of her M.Sc Nursing course.

I request you to kindly permit her to conduct a study on the Topic mentioned above at your institution.

Hope you will do the needful.

Thanking you,

Yours faithfully,
For **LAXMI MEMORIAL COLLEGE OF NURSING**

PRINCIPAL
Principal
Laxmi Memorial College of Nursing
A.J. Tower, Balmatta
MANGALORE - 575 002

Permitted to conduct the study

Sr. Marie Deanne - MC
24/07/09.

Annexure 3

Letter requesting experts opinion to establish content validity

From

Miss. Riya jose
I MSc.Nursing
Laxmi Memorial College of Nursing
Mangalore.

To

Respected Sir/Madam

Subject: Request for expert opinion and suggestions to establish content validity of the research tool.

I, Riya Jose, I MSc Nursing at Laxmi Memorial College of Nursing have selected the following topic for my dissertation to be submitted to Rajiv Gandhi University of Health Sciences in partial fulfillment for the requirement for award of Master of Science in Nursing.

Topic: Effectiveness of regular physical activities in promoting wellbeing among elderly population (60-70 years) in a selected old age home, Mangalore.

Here with I have enclosed

- Objectives of the study
- Operational definitions
- Blue-print
- Baseline proforma
- Physical activity assessment tool
- Well being assessment tool
- Scorings of physical activity assessment tool
- Scorings of well being assessment tool
- Criteria checklists for the tool.

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, additions and deletions, if any, in the remark column.

Thanking you

Yours Sincerely

Riya Jose

Date :

Place : Mangalore

Annexure 4

Acceptance form for tool validation

Name :

Designation :

Name of the college :

Statement of acceptance / non-acceptance

I give my acceptance / non acceptance to validate the tool.

Topic : "Effectiveness of regular physical activities in promoting wellbeing among elderly population (60-70 years) in a selected old age home, Mangalore".

Place:

Signature

Date:

Annexure 5

Content validation certificate

I hereby certify that I have validated the tool of Riya Jose , I MSc Nursing, Laxmi Memorial College of Nursing who is undertaking the following study:

"Effectiveness of regular physical activities in promoting wellbeing among elderly population (60-70 years) in a selected old age home, Mangalore".

Place: Mangalore
Date:

Signature of the expert

Designation and address

Annexure 6

Criteria checklist for validation of the tool

Instructions:

Kindly go through the items in the enclosed tool and place a tick (√) mark against each item in the column provided indicating your best opinion. These are three columns, namely, **Strongly Agree (SA), Agree (A) and Disagree (DA).** If there are any suggestions, please mention them in the remarks column.

Q. No.		SA	A	DA	REMARKS
SECTION-1. BASELINE PROFORMA					
1.	Age				
2.	Sex				
3.	Marital status				
4.	Number of children				
5.	Education				
6.	History of chronic disease				
SECTION-II. PHYSICAL ACTIVITY ASSESSMENT TOOL					
A. PERSONAL HYGIENE					
1.					
2.					
3.					
4.					
5.					
B. DRESSING					
6.					
7.					
8.					
C. MOVEMENT					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
D. FEEDING					
19.					
20.					
21					

Q. No.		SA	A	DA	REMARKS
E. TOILETING					
22.					
23.					
24.					
25.					
SECTION – III WELLBEING ASSESSMENT TOOL					
A. PHYSICAL HEALTH					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
B. PSYCHOSOCIAL HEALTH					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
C. SPIRITUAL HEALTH					
26.					
27.					
28.					
29.					

Annexure 7

BLUE PRINT OF TOOL

BLUE PRINT FOR PHYSICAL ACTIVITY ASSESSMENT TOOL

SI NO	CONTENT AREA	NO OF QUESTIONS	%
	LEVEL OF PHYSICAL ACTIVITY	**25**	
A.	PERSONAL HYGIENE	5 (1-5)	20
B.	DRESSING	3(6-8)	12
C.	MOVEMENT	10 (9-18)	40
D.	FEEDING	3 (19-21)	12
E.	TOILETING	4(22-25)	16
	TOTAL	**25**	**100**

BLUEPRINT FOR WELLBEING ASSESSMENT TOOL

SI NO	CONTENT AREA	NO OF QUESTIONS	%
	LEVEL OF WELLBEING	**29**	**%**
A.	PHYSICAL HEALTH	12(1-12)	41
B.	PSYCHOSOCIAL HEALTH	13(13-25)	45
C.	SPIRITUAL HEALTH	4(26-29)	14
	TOTAL	**29**	**100**

Annexure 8

Consent Form (English)

Dear participant,

I am Miss. Riya Jose, M.Sc Nursing student of Laxmi memorial college of Nursing. I am doing my research study regarding,

"Effectiveness Of Regular Physical Activities In Promoting Wellbeing Among Elderly Population (60-70 Years) In A Selected Old age Home, Mangalore".

Regular physical activities which I make you to practice include walking and climbing stairs and are known to improve the general health and wellbeing. If you are not interested to continue the study, you can discontinue from the study at any time.

In this regard I would like to ask you few questions about the level of physical activity and wellbeing and based on that regular physical activities will be administered for two weeks under my supervision. I would like to know the level of wellbeing before and after doing regular physical activities .The information will be used only for the partial fulfillment of the M.Sc. nursing programme and information will be kept confidential. This is for your information and kind participation.

Signature of investigator

I ---------- here by consent to participate in the study

Signature of the participant

Annexure 9

Consent Form (Kannada)

ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸಮ್ಮತಿ

ಆತ್ಮೀಯರೇ,

ನಾನು, ರಿಯಾ ಜೋಸ್, ಲಕ್ಷ್ಮೀ ಮೆಮೋರಿಯಲ್ ಕಾಲೇಜ್ ಆಫ್ ನರ್ಸಿಂಗ್‌ನಲ್ಲಿ ಎಂ. ಎಸ್ಸಿ. ನರ್ಸಿಂಗ್ ಮಾಡುತ್ತಿದ್ದು ಈ ಕೆಳಗಿನ ಅಧ್ಯಯನವನ್ನು ನಡೆಸುತ್ತಿದ್ದೇನೆ:

ಮಂಗಳೂರಿನ ವೃದ್ಧಾಶ್ರಮದಲ್ಲಿರುವ ವಯಸ್ಕರ ಯೋಗಕ್ಷೇಮದ ಮೇಲೆ ನಿಯಮಿತ ದೈಹಿಕ ಚಟುವಟಿಕೆಗಳ ಪರಿಣಾಮ

ನಿಮ್ಮ ಆರೋಗ್ಯ ಮತ್ತು ಯೋಗಕ್ಷೇಮವನ್ನು ಉತ್ತಮಪಡಿಸುವಲ್ಲಿ ಸಹಕಾರಿಯಾದ ನಡಿಗೆ ಮತ್ತು ಮೆಟ್ಟಲು ಹತ್ತುವ ಚಟುವಟಿಕೆಗಳನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ನಿಮಗೆ ಇಷ್ಟವಿಲ್ಲದಿದ್ದಲ್ಲಿ ನೀವು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಈ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಬಹುದು.

ಈ ಸಂಬಂಧ ನಿಮ್ಮ ದೈಹಿಕ ಚಟುವಟಿಕೆಗಳು ಮತ್ತು ಯೋಗಕ್ಷೇಮದ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಿ ಎರಡು ವಾರಗಳ ಕಾಲ ನಿಮಗೆ ವ್ಯಾಯಾಮವನ್ನು ಕಲಿಸಲಾಗುವುದು. ನೀವು ನೀಡಿದ ಮಾಹಿತಿಯನ್ನು ಅಧ್ಯಯನಕ್ಕೆ ಮಾತ್ರ ಉಪಯೋಗಿಸಿ ಅದನ್ನು ಗೌಪ್ಯವಾಗಿಡಿಲಾಗುವುದು ಎಂದು ನಿಮಗೆ ಆಶ್ವಾಸನೆ ನೀಡುತ್ತೇನೆ.

ಅಧ್ಯಯನಕಾರರ ಸಹಿ

ನಾನು, _____, ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಇಚ್ಛಿಸುತ್ತೇನೆ.

ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವವರ ಸಹಿ

Annexure 10

Tool (English)

Structured interview schedule to assess the level of physical activity and wellbeing

SECTION I

BASELINE PROFORMA

Answer the following questions concerning your personal life.

CODE NO-

1. AGE

A) (60-65 yrs)

B) (66-70 yrs)

2. SEX

A) (Male)

B) (Female)

3. MARITAL STATUS

A) Married

B) Single

C) Divorce

D) Widow

E) Widower

4. NUMBER OF CHILDREN

A). none

B). one

C). two

D). above two

5. EDUCATION

A) Illiterate

B) Primary school

C) Middle school

D) High school

E) PUC

F) Degree/above

G) Professional/ technical education

6. HISTORY OF CHRONIC DISEASE

A) Only Hypertension

B) Only Diabetes mellitus

C) Only Arthritis

D) Only Asthma

E) Any other specify

F) More than one of the above

SECTION II

PHYSICAL ACTIVITY ASSESSMENT TOOL

INSTRUCTION

I would like to ask you about some of the activities of daily living, things that we all need to do as a part of our daily lives. I would like to know if you cannot do these activities, or if you can but with little difficulty or if you can do without any difficulty.

A) PERSONAL HYGEINE	**Cannot do**	**Can do, but with little difficulty**	**Can do Without any difficulty**
1. washing hands and face 2 brushing the teeth 3 bathing 4 drying hair after bathing 5 combing hair			
B) DRESSING	**Cannot do**	**Can do, but with little difficulty**	**Can do Without any difficulty**
6 getting clothes from drawer 7 dressing completely 8 undressing completely			
C) MOVEMENT	**Cannot do**	**Can do, but with little difficulty**	**Can do Without any difficulty**
9 squatting 10 standing 11 walking 12 running 13 climbing upstairs 14 getting downstairs			

15 sitting in a chair/bed 16 getting up from a chair/bed 17 getting into a bed 18 getting out of bed.			
D)FEEDING	**Cannot do**	**Can do but with little difficulty**	**Can do without any difficulty**
19. holding a spoon / using own hands while eating. 20. holding a tumbler/glass filled with tea/coffee/water etc while drinking. 21. feeding yourself completely (needs some help for cutting etc).			
E)TOILETING	**Cannot do**	**Can do but with little difficulty**	**Can do without any difficulty**
22 walking to the toilet by yourself 23 sitting on the toilet /commode 24 taking care to prevent wetting / soiling of clothes 25 washing properly after toileting			

SCORING KEY

ITEMS	IDEAL SCORE	PERSON'S SCORE
PERSONAL HYGIENE	10	
DRESSING	6	
MOVEMENT	20	
FEEDING	6	
TOILETING	8	
TOTAL SCORE	50	

Interpretation

Scores of **< 17** - low functioning level

Scores of **17 – 34** - moderate functioning level

Scores of **> 34** - high functioning level

For the answers 'cannot do', 'can do but with little difficulty' and 'can do without any difficulty' the scores are given as 0, 1 and 2 respectively

SECTION III
WELLBEING ASSESSMENT TOOL

Now answer yes or no for the following set of questions regarding each dimensions of wellness

A PHYSICAL HEALTH		
ITEMS	**YES**	**NO**
Are you able to:- 1 maintains a desirable weight?		
2 stand straight?		
3 engage in vigorous exercises such as brisk walking?		
4 do exercises to strengthen your muscles and joints?		
5 take prescribed drugs by yourself during any illness?		
6 warm up and cool down by stretching before and after vigorous exercise?		
7 sleep well each night?		
8 regain your health quickly when you get sick or injured?		
9 perform well throughout the day without being overly tired?		
10 seek professional advice when any health problems occur?		
11 control urination?		
12 control defecation?		
B PSYCHOSOCIAL HEALTH		
Do you feel that you are able to:- 13 get along with other people?		
14 participate in a wide variety of social activities and enjoy yourself?		
15 talk with some one about your personal feelings?		
16 remain cool on simple matters?		
17 think good about you?		
18 adjust in a positive way when hurt by family members?		
19 adjust in a positive way when neglected by care takers?		
20 overcome loneliness?		
21 overcome depression?		
22 adjust to change in a positive way?		

23 engage in leisure activities when you are in stress ?		
24 consider the feelings of others ?		
25 experience satisfaction when your needs are met ?		
C SPIRITUAL HEALTH		
ITEMS	**YES**	**NO**
Do you believe:- 26 in supreme power?		
27 that life is a precious gift?		
28 that prayer is an important part of your life?		
29 that reading spiritual books give peace?		

SCORING KEY

ITEMS	IDEAL SCORE	PERSON'S SCORE
PHYSICAL HEALTH	12	
PSYCHOSOCIAL HEALTH	13	
SPIRITUAL HEALTH	4	
TOTAL SCORE	**29**	

Interpretation

Scores of **< 10** - low wellbeing level

Scores of 10 **- 20** - moderate wellbeing level

Scores of **>20** - high wellbeing level

For each ' yes' answer , a score of '1' is awarded and for each ' no' answer a score of '0' is being given.

Annexure 11

Tool (kannada)

ಭಾಗ I: ವೈಯಕ್ತಿಕ ಮಾಹಿತಿ

ದೈಹಿಕ ಚಟುವಟಿಕೆ ಹಾಗೂ ಯೋಗಕ್ಷೇಮದ ವ್ಯವಸ್ಥಿತ ಸಂದರ್ಶನ ವಿವರಪಟ್ಟಿ

ಸೂಚನೆಗಳು: ನಿಮ್ಮ ವೈಯಕ್ತಿಕ ಮಾಹಿತಿಯ ಬಗ್ಗೆ ಇರುವ ಈ ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಓದಿ ಸರಿಯಾದ ಉತ್ತರದ ಮುಂದೆ ✓ ಗುರುತು ಹಾಕಿ.

ಕ್ರಮ ಸಂಖ್ಯೆ: ____

1. ವಯಸ್ಸು (ವರ್ಷಗಳಲ್ಲಿ)
   - a. 60–65 ವರ್ಷಗಳು [ ]
   - b. 66–70 ವರ್ಷಗಳು [ ]
2. ಲಿಂಗ
   - a. ಪುರುಷ [ ]
   - b. ಸ್ತ್ರೀ [ ]
3. ವೈವಾಹಿಕ ಮಾಹಿತಿ
   - a. ವಿವಾಹಿತ/ವಿವಾಹಿತೆ [ ]
   - b. ಅವಿವಾಹಿತ/ಅವಿವಾಹಿತೆ [ ]
   - c. ವಿಚ್ಛೇದಿತ/ವಿಚ್ಛೇದಿತೆ [ ]
   - d. ವಿಧುರ/ವಿಧವೆ [ ]
4. ಮಕ್ಕಳ ಸಂಖ್ಯೆ
   - a. ಮಕ್ಕಳಿಲ್ಲ [ ]
   - b. ಒಂದು [ ]
   - c. ಎರಡು [ ]
   - d. ಎರಡಕ್ಕಿಂತ ಹೆಚ್ಚು [ ]
5. ವಿದ್ಯಾಭ್ಯಾಸ
   - a. ಅವಿದ್ಯಾವಂತ [ ]
   - b. ಪ್ರಾಥಮಿಕ [ ]
   - c. ಹಿರಿಯ ಪ್ರಾಥಮಿಕ [ ]
   - d. ಪ್ರೌಢ [ ]
   - e. ಪಿಯುಸಿ [ ]
   - f. ಪದವಿ ಮತ್ತು ಅದಕ್ಕಿಂತ ಮೇಲ್ಪಟ್ಟ ಶಿಕ್ಷಣ [ ]
   - g. ವೃತ್ತಿಪರ/ತಾಂತ್ರಿಕ [ ]
6. ನಿಮಗೆ ಈ ಕೆಳಗಿನ ಯಾವ ಅನಾರೋಗ್ಯವಿದೆ?
   - a. ಕೇವಲ ಅಧಿಕ ರಕ್ತದೊತ್ತಡ [ ]
   - b. ಕೇವಲ ಸಕ್ಕರೆ ಕಾಯಿಲೆ [ ]
   - c. ಕೇವಲ ಗಂಟು ನೋವು [ ]
   - d. ಕೇವಲ ಅಸ್ತಮಾ [ ]
   - e. ಇತರ, ನಮೂದಿಸಿ _____ [ ]
   - f. ಒಂದಕ್ಕಿಂತ ಹೆಚ್ಚು ತೊಂದರೆ [ ]

ಭಾಗ II: ದೈಹಿಕ ಚಟುವಟಿಕೆಯ ಮಾಪಕ

ನಾನು ನಿಮ್ಮ ದೈನಂದಿನ ಕೆಲಸಕಾರ್ಯಗಳ ಬಗ್ಗೆ ಕೇಳಲು ಇಷ್ಟಪಡುತ್ತೇನೆ. ಅವುಗಳನ್ನು ಮಾಡಲು ನಿಮಗೆ ಸಾಧ್ಯವಿದೆಯೇ, ಸ್ವಲ್ಪ ಕಷ್ಟವೇ ಅಥವಾ ಮಾಡಲು ಸಾಧ್ಯ ಇಲ್ಲವೇ ಎಂದು ತಿಳಿಸಿ.

ಹೇಳಿಕೆಗಳು	ಮಾಡಲು ಸಾಧ್ಯವಿಲ್ಲ	ಮಾಡಲು ಸ್ವಲ್ಪ ಕಷ್ಟ	ಮಾಡಲು ಸಾಧ್ಯ
ದೇಹದ ಸ್ವಚ್ಛತೆಯನ್ನು ಕಾಪಾಡುವುದು			
1. ಕೈ ಮತ್ತು ಕಾಲು ತೊಳೆಯುವುದು			
2. ಹಲ್ಲು ಉಜ್ಜುವುದು			
3. ಸ್ನಾನ ಮಾಡುವುದು			
4. ಸ್ನಾನದ ನಂತರ ತಲೆ ಒರಸುವುದು			
5. ಕೂದಲು ಬಾಚುವುದು			
ಬಟ್ಟೆ ಧರಿಸುವುದು	ಮಾಡಲು ಸಾಧ್ಯವಿಲ್ಲ	ಮಾಡಲು ಸ್ವಲ್ಪ ಕಷ್ಟ	ಮಾಡಲು ಸಾಧ್ಯ
6. ಕಪಾಟಿನಿಂದ ಬಟ್ಟೆಗಳನ್ನು ಹೊರಗೆ ತೆಗೆಯುವುದು			
7. ಬಟ್ಟೆ ಧರಿಸುವುದು			
8. ಬಟ್ಟೆ ತೆಗೆಯುವುದು			
ನಡೆದಾಡುವುದು	ಮಾಡಲು ಸಾಧ್ಯವಿಲ್ಲ	ಮಾಡಲು ಸ್ವಲ್ಪ ಕಷ್ಟ	ಮಾಡಲು ಸಾಧ್ಯ
9. ನೆಲದ ಮೇಲೆ ಕಾಲು ಮಡಚಿ ಕುಳಿತುಕೊಳ್ಳುವುದು			
10. ನಿಂತುಕೊಳ್ಳುವುದು			
11. ನಡೆಯುವುದು			
12. ಓಡುವುದು			
13. ಮೆಟ್ಟಲು ಹತ್ತುವುದು			
14. ಮೆಟ್ಟಲು ಇಳಿಯುವುದು			
15. ಕುರ್ಚಿ ಅಥವಾ ಹಾಸಿಗೆಯ ಮೇಲೆ ಕುಳಿತುಕೊಳ್ಳುವುದು			
16. ಕುರ್ಚಿ ಅಥವಾ ಹಾಸಿಗೆಯ ಮೇಲಿಂದ ಏಳುವುದು			
17. ಹಾಸಿಗೆಯ ಮೇಲೆ ಮಲಗುವುದು			
18. ಹಾಸಿಗೆಯಿಂದ ಏಳುವುದು			

ಆಹಾರ ಸೇವನೆ		ಮಾಡಲು ಸಾಧ್ಯವಿಲ್ಲ	ಮಾಡಲು ಸ್ವಲ್ಪ ಕಷ್ಟ	ಮಾಡಲು ಸಾಧ್ಯ
19.	ತಿನ್ನುವಾಗ ಚಮಚ ಹಿಡಿಯುವುದು ಅಥವಾ ಕೈಯಿಂದ ತಿನ್ನುವುದು			
20.	ತುಂಬಿದ ಲೋಟವನ್ನು ಹಿಡಿಯುವುದು			
21.	ತಾನಾಗಿಯೇ ಆಹಾರವನ್ನು ಸೇವಿಸುವುದು			
	ಶೌಚ	ಮಾಡಲು ಸಾಧ್ಯವಿಲ್ಲ	ಮಾಡಲು ಸ್ವಲ್ಪ ಕಷ್ಟ	ಮಾಡಲು ಸಾಧ್ಯ
22.	ಪಾಯಿಖಾನೆಗೆ ಸ್ವತಃ ಹೋಗುವುದು			
23.	ಪಾಯಿಖಾನೆಯಲ್ಲಿ ಕುಳಿತುಕೊಳ್ಳುವುದು			
24.	ಬಟ್ಟೆಗಳಿಗೆ ಮೈಲಿಗೆಯಾಗದಂತೆ ಜಾಗರೂಕತೆ ವಹಿಸುವುದು			
25.	ಮಲ/ಮುತ್ರ ವಿಸರ್ಜನೆಯ ನಂತರ ಸರಿಯಾಗಿ ತೊಳೆಯುವುದು			

ಭಾಗ III: ಯೋಗಕ್ಷೇಮದ ಮಾಪಕ

ಕೆಳಗೆ ನೀಡಿದ ಪ್ರಶ್ನೆಗಳಿಗೆ ಹೌದು ಅಥವಾ ಇಲ್ಲ ಎಂದು ಉತ್ತರಿಸಿ.

ಪ್ರಶ್ನೆಗಳು		ಹೌದು	ಇಲ್ಲ
ದೈಹಿಕ ಆರೋಗ್ಯ			
1.	ನಿಮಗೆ ನಿಮ್ಮ ದೇಹದ ತೂಕದ ಮೇಲೆ ಹತೋಟಿಯಿದೆಯೇ?		
2.	ನಿಮಗೆ ನೆಟ್ಟಗೆ ನಿಲ್ಲಲು ಸಾಧ್ಯವಾಗುತ್ತದೆಯೇ?		
3.	ನಿಮಗೆ ವೇಗವಾಗಿ ನಡೆಯಲು ಸಾಧ್ಯವಾಗುತ್ತದೆಯೇ?		
4.	ನಿಮಗೆ ಸ್ನಾಯುಗಳು ಮತ್ತು ಗಂಟುಗಳನ್ನು ಬಲಪಡಿಸುವ ವ್ಯಾಯಾಮ ಮಾಡಲು ಸಾಧ್ಯವಿದೆಯೇ?		
5.	ಅಸೌಖ್ಯದಲ್ಲಿದ್ದಾಗ ಸ್ವತಃ ಔಷಧ ತೆಗೆದುಕೊಳ್ಳಲು ಆಗುತ್ತದೆಯೇ ?		
6.	ಕಠಿಣ ವ್ಯಾಯಾಮದ ಮೊದಲು ಮತ್ತು ನಂತರ ವಿಶ್ರಾಂತಿ ತೆಗೆದುಕೊಳ್ಳಲು ಆಗುತ್ತದೆಯೇ?		
7.	ನಿಮಗೆ ರಾತ್ರಿ ಚೆನ್ನಾಗಿ ನಿದ್ರೆ ಬರುತ್ತದೆಯೇ?		
8.	ನಿಮಗೆ ಅಸೌಖ್ಯ ಉಂಟಾದರೆ ಬೇಗನೆ ಗುಣಮುಖರಾಗುತ್ತೀರಾ?		
9.	ನಿಮಗೆ ದಿನವಿಡೀ ಆಯಾಸಗೊಳ್ಳದೆ ಕೆಲಸ ಮಾಡಲು ಆಗುತ್ತದೆಯೇ?		
10.	ಅನಾರೋಗ್ಯ ಉಂಟಾದಾಗ ವೈದ್ಯರಲ್ಲಿ ಹೋಗುತ್ತೀರಾ?		
11.	ನಿಮಗೆ ಮೂತ್ರವಿಸರ್ಜನೆ ಮಾಡುವುದರ ಮೇಲೆ ಹತೋಟಿಯಿದೆಯೇ?		
12.	ನಿಮಗೆ ಮಲ ವಿಸರ್ಜನೆ ಮಾಡುವುದರ ಮೇಲೆ ಹತೋಟಿಯಿದೆಯೇ?		
ಮನೋಸಾಮಾಜಿಕ ಆರೋಗ್ಯ		ಹೌದು	ಇಲ್ಲ
13.	ನಿಮಗೆ ಇತರರೊಡನೆ ಹೊಂದಿಕೊಳ್ಳಲು ಆಗುತ್ತದೆ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
14.	ನಿಮಗೆ ಸಾಮಾಜಿಕ ಸಮಾರಂಭಗಲಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸಾಧ್ಯವಿದೆ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
15.	ನಿಮ್ಮ ಭಾವನೆಗಳನ್ನು ಇತರರೊಡನೆ ಹಂಚಿಕೊಳ್ಳಲು ಸಾಧ್ಯವಿದೆ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
16.	ನಿಮಗೆ ತಾಳ್ಮೆ ಇದೆ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
17.	ನಿಮಗೆ ನಿಮ್ಮ ಬಗ್ಗೆ ಒಳ್ಳೆಯ ಭಾವನೆ ಇದೆಯೆಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
18.	ನಿಮ್ಮ ಕುಟುಂಬದವರು ನಿಮ್ಮ ಮನಸ್ಸನ್ನು ನೋಯಿಸಿದರೆ ಅದರ ಬಗ್ಗೆ ಚಿಂತಿತರಾಗುವುದಿಲ್ಲ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
19.	ನಿಮ್ಮ ಆರೈಕೆ ಚೆನ್ನಾಗಿ ಮಾಡದಿದ್ದರೂ ಅದರ ಬಗ್ಗೆ ನೀವು ತಲೆ ಕೆಡಿಸಿಕೊಳ್ಳುವುದಿಲ್ಲ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
20.	ನಿಮಗೆ ಏಕಾಂಗಿತನದೊಂದಿಗೆ ಹೊಂದಿಕೊಳ್ಳಲು ಸಾಧ್ಯವಿದೆ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		

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	ಪ್ರಶ್ನೆಗಳು	ಹೌದು	ಇಲ್ಲ
21.	ನಿಮಗೆ ಖಿನ್ನತೆಯನ್ನು ತಡೆದುಕೊಳ್ಳಲು ಸಾಧ್ಯವಿದೆ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
22.	ನೀವು ಬದಲಾಗುವ ಪರಿಸ್ಥಿತಿಗಳಿಗೆ ಹೊಂದಿಕೊಳ್ಳುತ್ತೀರಿ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
23.	ನೀವು ಮಾನಸಿಕ ಒತ್ತಡಕ್ಕೊಳಗಾದಾಗ ಯಾವುದಾದರೂ ಕೆಲಸದಲ್ಲಿ ತೊಡಗಲು ಸಾಧ್ಯ ಎಂದು ಅನಿಸುತ್ತದೆಯೇ?		
24.	ನೀವು ಇತರರ ಭಾವನೆಗಳನ್ನು ಅರ್ಥ ಮಾಡಿಕೊಳ್ಳುತ್ತೀರಿ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
25.	ನಿಮ್ಮ ಅವಶ್ಯಕತೆಗಳನ್ನು ಪೂರೈಸಿದಾಗ ನಿಮಗೆ ತೃಪ್ತಿಯಾಗುತ್ತದೆ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತದೆಯೇ?		
ಆಧ್ಯಾತ್ಮಿಕ ಆರೋಗ್ಯ		**ಹೌದು**	**ಇಲ್ಲ**
26.	ನಿಮಗೆ ದೇವರಲ್ಲಿ ನಂಬಿಕೆಯಿದೆಯೇ?		
27.	ಜೀವನವು ಅಮೂಲ್ಯವಾದ ಕೊಡುಗೆ ಎಂದು ನೀವು ನಂಬುತ್ತೀರಾ?		
28.	ಪ್ರಾರ್ಥನೆಯು ನಿಮ್ಮ ಜೀವನದ ಪ್ರಮುಖ ಅಂಗ ಎಂದು ನೀವು ನಂಬುತ್ತೀರಾ?		
29.	ಧಾರ್ಮಿಕ ಪುಸ್ತಕಗಳನ್ನು ಓದುವುದರಿಂದ ನಿಮ್ಮ ಮನಸ್ಸಿಗೆ ಶಾಂತಿ ಸಿಗುತ್ತದೆ ಎಂದು ನೀವು ನಂಬಿಕೆ ಇಟ್ಟುಕೊಂಡಿದ್ದೀರಾ?		

Annexure 12

List of validators

1. Prof Samuel George
   Principal
   City College of Nursing
   Shakthinagar, Mangalore.

2. Prof Suja Karkada
   Manipal College of Nursing
   Manipal

3. Mrs. Jacintha Veigas
   Vice Principal
   Sahyadri College of Nursing
   Mangalore.

4. Mrs Marriate D' Silva
   Vice Principal
   K.Pandiraja Ballal College of Nursing
   Ullal, Mangalore.

5. Mrs. Leena K.C
   Associate professor
   Father Muller College of Nursing,
   Mangalore

6. Mrs. Irene Alvares
   Associate Professor
   Father Muller College of Nursing,
   Mangalore.

7. Mrs Devina Rodrigues
Associate Professor
City College of Nursing.
Shakthinagar, Mangalore

8. Dr. Sandeep Alex
Assistant Professor
Department of Psychiatry
Father Muller Medical College.
Mangalore

9 Mr Suresh kumar
Lecturer in statistics
Laxmi Memorial college of Nursing
Mangalore

Annexure 13

List of Statistical Formulae

1. Karl-Pearson's coefficient of correlation

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2}\sqrt{\sum(y-\bar{y})^2}}$$

2. Spearman-Brown Prophecy formula

$$r^1 = \frac{2r}{1+r}$$

r = Karl-Pearson's coefficient of correlation.

r^1 = The estimated reliability of the entire test.

3. Paired 't' test

$$t = \frac{\bar{d}\ \sqrt{n}}{sd}$$

d = mean of difference of pre-test and post-test score.

n = number of paired observations.

sd = standard deviation of differences of pre-test and post-test knowledge scores.

$$sd = \sqrt{\frac{\Sigma(di-\bar{d})^2}{n-1}}$$

$$\Sigma(di-\bar{d})^2 = \Sigma di^2 - \frac{(\Sigma di)^2}{n}$$

4. Unpaired 't' test

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{(n_1-1)s_1^{\,2} + (n_2-1)s_2^{\,2}}{n_1+n_2-2}\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$\overline{x_1}$ = mean of scores in first group.

$\overline{x_2}$ = mean of scores in second group.

n_1 = number of observations in first group.

n_1 = number of observations in second group.

s_1 = standard deviation of observations in first group.

s_2 = standard deviation of observations in second group.

Annexure 14

Master data sheet

PRE-TEST (EXPERIMENTALGROUP)

Sl No.	DEMOGRAPHIC PROFORMA						PHYSICAL ACTIVITY ASSESSMENT TOOL																							
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	a	b	d	d	c	c	2	2	1	1	1	1	1	1	1	1	2	0	1	1	1	1	1	1	2	2	2	2	1	1	1
2	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
3	a	a	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	2	2	2	1	1	1	1
4	b	a	c	d	d	e	2	2	1	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
5	a	d	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
6	b	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
7	a	a	e	d	b	b	2	2	2	2	2	2	2	2	1	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2
8	a	a	a	d	b	f	2	2	1	2	2	1	2	2	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
9	a	b	a	d	c	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
10	b	a	b	a	c	c	2	2	1	2	2	1	1	1	0	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
11	a	b	c	a	d	d	2	2	1	2	2	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
12	a	a	a	d	d	d	2	2	1	2	2	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
13	b	a	b	a	a	d	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	2	2	2	2	2	1	1	1	1
14	a	a	e	d	c	c	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
15	a	b	a	d	b	f	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
16	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
17	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
18	b	a	a	d	b	c	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	1	2	2	1	1	1	1
19	a	a	e	d	c	e	2	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	2	1	2	2	1	2	1	2	1
20	b	b	d	c	b	d	1	1	0	1	1	1	1	1	0	2	2	0	0	0	2	1	2	0	1	1	1	1	0	1	1

Sl No.	DEMOGRAPHIC PROFORMA						PHYSICAL ACTIVITY ASSESSMENT TOOL																							
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
21	b	a	c	d	d	e	2	2	1	2	2	2	2	2	0	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
22	a	b	a	c	c	a	2	2	2	2	2	1	2	2	1	2	2	1	1	1	1	1	1	1	2	1	2	2	1	1	1
23	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
24	a	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
25	b	a	b	a	a	d	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	2	2	2	2	2	1	1	1	1
26	a	a	a	d	b	c	2	2	1	2	2	1	2	2	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
27	a	a	e	d	d	b	2	2	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1
28	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
29	a	a	a	d	b	a	2	2	1	2	2	1	1	1	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
30	a	b	d	d	a	e	2	2	0	1	1	2	2	2	1	1	1	1	1	1	1	1	2	1	2	1	1	1	0	1	1
31	a	a	a	b	d	e	2	2	2	2	2	2	2	2	1	2	2	0	1	1	2	1	2	1	2	2	2	2	2	2	1
32	b	b	d	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
33	b	b	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34	a	b	a	d	b	a	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
35	b	a	a	d	c	a	2	2	1	2	2	2	2	2	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
36	a	b	c	a	d	d	2	2	2	1	1	2	2	2	1	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2
37	a	b	d	d	c	c	2	2	1	1	1	1	1	1	1	1	2	0	1	1	1	1	1	1	2	2	2	2	1	1	1
38	a	a	a	d	b	c	2	2	1	2	2	1	1	1	1	1	1	1	0	0	1	1	1	1	2	2	2	1	1	1	1
39	a	a	e	d	b	b	2	2	2	2	2	2	2	2	1	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2
40	b	b	a	d	b	c	2	2	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1

PRE-TEST (EXPERIMENTAL GROUP)

Sl No.	WELLBEING ASSESSMENT TOOL																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	1
2	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	1	0	1	1	1	1	1	1
4	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1
5	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1
6	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
7	1	1	0	0	1	0	1	0	1	0	1	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
8	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	1	1	0	1	0	1	1	1	1	1	1
9	1	1	0	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
11	1	1	0	0	1	0	0	0	1	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
12	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
13	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	1	1	1	1
14	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
15	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
16	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
17	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
19	1	1	0	0	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1
20	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	1	1	0	0	1	1	1	1	1	1

Sl No	WELLBEING ASSESSMENT TOOL																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
21	1	1	0	0	1	0	1	0	0	1	1	1	0	0	0	0	1	1	1	0	0	1	0	1	1	1	1	1	1
22	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1
23	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	1
24	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
25	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1
26	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1
27	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
28	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
29	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
30	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
31	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1`	1
32	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1
33	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
34	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
35	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
36	0	1	0	0	1	0	0	0	1	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
37	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
38	0	1	0	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	0	0	0	0	0	1	1	1	1	1	1
39	0	1	0	0	1	0	1	0	1	0	1	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1
40	1	1	0	0	0	0	1	0	0	1	1	1	0	0	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1

PRE-TEST (CONTROL GROUP)

Sl No.	DEMOGRAPHIC PROFORMA						PHYSICAL ACTIVITY ASSESSMENT TOOL																								
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	a	a	a	d	d	b	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	b	a	a	d	b	a	2	2	2	2	2	2	2	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
3	b	b	d	d	b	f	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
4	a	a	a	d	b	a	2	2	1	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
5	a	a	a	d	b	e	2	2	2	2	2	2	2	2	1	2	2	1	1	1	2	1	2	1	2	2	2	2	2	2	1
6	b	b	a	d	b	b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	b	a	a	d	c	a	2	2	1	2	2	2	2	2	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
8	a	b	a	d	b	f	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
9	b	b	a	d	b	f	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
10	a	a	a	d	b	d	2	2	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	2	1	1	'	2	2	2	1
11	b	b	d	d	b	c	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
12	a	b	a	d	c	c	2	2	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
13	b	a	a	d	b	c	2	2	1	2	2	2	2	2	1	1	1	0	1	1	1	1	1	1	1	2	2	1	1	1	1
14	a	a	e	d	b	b	2	2	2	2	2	2	2	2	1	1	1	0	1	1	2	2	2	2	2	2	2	2	2	2	2
15	a	b	a	d	c	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
16	b	a	c	d	d	e	2	2	1	2	2	2	2	2	1	2	1	0	1	1	1	1	1	1	1	1	2	2	1	1	1
17	a	b	d	d	c	b	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	1	1	1
18	a	b	c	a	d	d	2	2	2	1	1	2	2	2	1	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2
19	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
20	b	a	b	a	c	c	2	2	1	2	2	1	1	1	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
21	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
22	a	a	a	d	b	e	2	2	1	2	2	2	2	2	1	2	2	1	1	1	2	1	2	1	1	2	2	2	1	1	1
23	a	a	a	d	d	d	2	2	1	2	2	1	2	2	1	2	1	0	1	1	1	1	1	1	1	1	2	2	1	1	1
24	a	a	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	2	2	2	1	1	1	1
25	b	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1
26	a	a	a	d	b	c	2	2	1	2	2	1	2	2	0	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
27	a	b	d	d	c	c	2	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	2	2	2	1	1	1
28	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
29	a	a	a	d	b	a	2	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2
30	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
31	b	a	b	a	a	d	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	2	2	2	2	2	1	1	1	1
32	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
33	a	a	e	d	c	c	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1

PRE-TEST (CONTROL GROUP)

Sl No.	WELLBEING ASSESSMENT TOOL																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
2	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
4	1	1	0	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	1	0	0	0	0	1	1	1	1	1	1
5	1	1	0	0	0	0	1	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
6	1	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	1	1	1	0	0	1	0	1	'	1	1	1	1
7	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
8	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
9	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	1	0	0	0	1	1	0	0	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1
11	0	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
12	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	1	1	1	1	1
13	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
14	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
15	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
16	1	1	0	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
17	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
18	1	1	0	0	1	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
19	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
20	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
21	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
22	1	1	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
23	1	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
24	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
25	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
26	0	1	0	0	0	0	1	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
27	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
28	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
29	1	1	0	1	0	0	0	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	1
30	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	1	0	0	0	0	1	1	1	1	1	1
31	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
32	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1
33	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1

PRETEST (EXPERIMENTAL GROUP)

Sl No.	DEMOGRAPHIC PROFORMA						PHYSICAL ACTIVITY ASSESSMENT TOOL																								
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
2	a	b	a	d	b	f	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
3	a	b	a	d	c	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
4	a	a	a	d	b	f	2	2	1	2	2	1	2	2	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
5	b	b	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	a	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
7	a	a	a	d	d	d	2	2	1	2	2	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
8	a	b	d	d	a	e	2	2	0	1	1	2	2	2	1	1	1	1	1	1	1	1	2	1	2	1	1	1	0	1	1
9	b	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
10	a	b	d	d	c	c	2	2	1	1	1	1	1	1	1	1	2	0	1	1	1	1	1	1	2	2	2	2	1	1	1
11	b	a	a	d	b	c	2	2	1	2	2	2	2	2	1	1	1	0	1	1	1	1	1	1	1	2	2	1	1	1	1
12	a	a	a	d	b	a	2	2	1	2	2	1	1	1	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1
13	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
14	a	a	e	d	c	c	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
15	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
16	b	a	c	d	d	e	2	2	1	2	2	2	2	2	0	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
17	a	a	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	2	2	2	1	1	1	1
18	b	b	d	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
19	b	a	b	a	a	d	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	2	2	2	2	2	1	1	1	1
20	a	b	a	d	b	a	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1

PRETEST (EXPERIMENTAL GROUP)

Sl No.	WELLBEING ASSESSMENT TOOL																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
2	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
4	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
5	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
6	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
7	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
8	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
9	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
11	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
12	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
13	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
14	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
15	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1
16	1	1	0	0	1	0	1	0	0	1	1	1	0	0	0	0	1	1	1	0	0	1	0	1	1	1	1	1	1
17	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
18	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1
19	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
20	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1

PRETEST (CONTROL GROUP)

Sl No	DEMOGRAPHIC PROFORMA						PHYSICAL ACTIVITY ASSESSMENT TOOL																							
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	b	a	a	d	b	c	2	2	1	2	2	2	2	2	1	1	1	0	1	1	1	1	1	1	1	2	2	1	1	1	1
2	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1
3	b	a	a	d	c	a	2	2	1	2	2	2	2	2	1	2	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1
4	a	b	d	d	c	b	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
5	b	b	a	d	d	c	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1
6	b	b	d	d	b	f	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1
7	a	b	a	d	c	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
8	b	a	b	a	a	d	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	2	2	2	2	2	1	1	1	1
9	b	b	a	d	b	f	2	2	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	b	b	d	d	b	c	2	2	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
11	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
12	a	a	a	d	b	c	2	2	1	2	2	1	2	2	0	1	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1
13	a	b	a	d	b	c	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
14	a	b	a	d	b	f	2	2	1	1	1	1	1	1	1	2	1	0	1	1	1	1`	1	1	1	1	1	2	1	1	1
15	b	b	a	d	b	c	2	2	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	1
16	b	a	c	d	d	e	2	2	1	2	2	2	2	2	1	2	1	0	1	1	1	1	1	1	1	1	2	2	1	1	1
17	a	a	a	d	b	a	2	2	1	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
18	a	a	a	d	b	c	2	2	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	2	2	2	1	1	1	1
19	b	a	a	d	d	a	2	2	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	b	a	b	a	c	c	2	2	1	2	2	1	1	1	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1

PRE-TEST (CONTROL GROUP)

Sl No.	WELLBEING ASSESSMENT TOOL																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
2	1	1	0	0	1	0	1	0	1	1	0	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
4	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
5	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
6	0	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
7	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
8	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
9	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
11	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
12	0	1	0	0	0	0	1	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
13	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	1	1	0	0	0	0	1	1	1	1	1	1
14	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
15	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
16	1	1	0	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
17	1	1	0	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	1	0	0	0	0	1	1	1	1	1	1
18	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
19	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
20	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1

POST-TEST (EXPERIMENTAL GROUP)

Sl No	WELLBEING ASSESSMENT TOOL																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
2	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	1	0	1	0	0	0	1	1	1	0	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1
4	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
5	1	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
6	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1	1	1	1	1
7	1	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1
8	0	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
9	1	1	0	0	0	0	1	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1
11	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
12	1	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1
13	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
14	0	1	0	0	0	0	1	0	0	1	1	1	1	0	1	1	1	0	1	0	0	0	0	0	1	1	1	1	1
15	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	1	1
16	1	1	0	0	1	0	1	0	0	1	1	1	1	0	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1
17	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1
18	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	0	0	1	0	1	1	1	1	1	1
19	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1
20	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1

POST- TEST (CONTROL GROUP)

Sl No	WELLBEING ASSESSMENT TOOL																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
2	1	1	0	0	1	0	1	0	1	1	0	1	1	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1
3	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1
4	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
5	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
6	0	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
7	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
8	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
9	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	0	1	0	0	1	0	0	0	1	1	1	1	1	1
10	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
11	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
12	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1
13	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	1	1	0	0	0	1	1	1	1	1	1
14	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
15	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
16	1	1	0	0	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
17	1	1	0	0	1	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1
18	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
19	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1
20	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1